ENVIRONMENTAL ASSESSMENT REPORT University Heights Sites C and E

Prepared for

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1.0 INTRODUCTION: PROGRAM OBJECTIVES

J M Sorge, Inc. (JMS) has been retained by K. Hovnanian Companies of North Jersey, Inc., to perform environmental evaluation and remediation activities at University Heights Development Sites C and E, located in Newark, New Jersey. The objectives of the program are as follows:

- o Identify and remove all underground tanks and associated contaminated soil;
- o Conduct soil testing as necessary to determine quality of fill on site;
- o Supervise the removal of contaminated soils and conduct post-excavation confirmatory sampling; and,
- o Document the testing and cleanup conducted on site.

This report details the findings of the initial phase of these activities, including site investigation and subsurface evaluation, and contains proposed remedial activities regarding areas of contaminated soil and the underground storage tanks not associated with occupied dwellings or businesses at the time of this investigation. As additional properties become accessible, they will be investigated and remedial plans developed accordingly.

1.1 APPROACH

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In August 1989, a limited investigation of portions of this area was conducted. Subsequently, beginning on June 19, 1992 and continuing until July 10, 1992, JMS field personnel investigated the sites through a number of means in order to identify potential areas of environmental concern. The findings of the original investigations have been incorporated into this report. Initially, JMS personnel visually inspected the site to determine the presence of stained soils, refuse, storage tanks or other potential causes of environmental degradation.

The visual inspection was followed by a subsurface evaluation, using electromagnetic remote sensing to identify potential underground storage tanks. This was followed by trenching, test pit installation and soil boring installation to evaluate tank location and condition, and to delineate any areas of contamination.

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2.0 ENVIRONMENTAL SETTING

Sites C and E comprise seven (7) blocks in the University Heights section of the City of Newark. A site location map is provided as Figure 1. Site C consists of city tax blocks 403, 408, and 409; Site E consists of blocks 404, 405, 406, and 407. A site plan is provided as Figure 2. The predominant land use within the surrounding area is residential with less than 10 percent commercial use. The sites were formerly residential tracts, however a gradual decline in the area resulted in the ultimate demolition of most of the existing structures by the City of Newark. The demolition consisted of leveling and filling the condemned portions of the site. Apparently, the residential heating oil tanks were not removed from the site prior to demolition. Further, the quality of the fill material used to grade the site was not established at the time of placement.

2.1 REGIONAL GEOLOGY

The site lies within the Piedmont Physiographic Province. The Piedmont Province is underlain by Triassic and Jurassic rocks of the Newark Group. These rocks are classified into four (4) formations: The Stockton Formation, the Lockatong Formation, the Brunswick Formation, and the Watchung Basalts.

The Stockton Formation consists of grey feldspathic sandstone, arkosic conglomerates, and red shale, and is locally up to 2800 feet in thickness. The Lockatong Formation rests conformably on the Stockton and consists of grey and black siltstone. At its type section it is over 3300 feet thick. The Brunswick Formation is the youngest sedimentary member of the Newark Group. This formation is of Triassic to Early Jurassic age, and consists of interbedded brown, reddish-brown and grey shale; sandy shales; sandstone; and some conglomerates. The total thickness of the Brunswick Formation exceeds 6000 feet.

The Watchung Basalts are a series of three (3) extensive lava flows of the same age as the Brunswick Formation, and can be found interbedded with it.

2.2 REGIONAL HYDROGEOLOGY

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The rocks of the Brunswick Formation are the main source of groundwater in Essex County. Water in these rocks occurs under confined and semi-confined conditions in the lowland areas of Newark where clay beds or till mantle the underlying rocks. Artesian pressure may be considerably reduced, or become unconfined due to the heavy pumping in the Newark area.

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Groundwater exists in unconfined or confined conditions in Pleistiocene glacial deposits above the bedrock. The unconfined groundwater occurs where sand and gravel deposits are not covered by clay, silt or till. These deposits are commonly less than 20 feet thick and do not yield large quantities of water. Confined and semi-confined groundwater occurs where sand and gravel deposits have been covered by clay, silt or till. These aquifers are found in buried bedrock valleys.

The shales and sandstones are generally capable of sustaining moderate to large yields. The best producing wells in the Brunswick Formation are commonly between depths of 300 to 400 feet. Drawdown due to pumping is greatest in the strike direction, (approximately North 30° East) and least in the direction perpendicular to strike. The average yield of large diameter production wells is in the range of 300 to 400 gallons per minute (gpm). Groundwater has been encountered on adjacent sites at depths of 13 to 20 feet. However, the presence of leaking water mains and buried basements has resulted in perched water zones at various intervals.

2.3 SITE SPECIFIC CONDITIONS

Sites C and E were extensively reworked during the process of demolition of the condemned housing and leveling of the area that occurred prior to this investigation. A soil boring program indicated that fill material consisting of building rubble, fill soils, and debris had been used during the post-demolition grading of the sites. Also, examination of the older maps from the City of Newark indicated that the area underwent considerable redevelopment during the period between 1910 and 1925. A review of aerial photos of the area from 1940, 1951, 1961, and 1974 indicates that the site was relatively stable until the period of 1961 thru 1974. Much of the demolition and grading of the site occurred at that time.

The soil boring and trenching investigation results indicate that native soils in the site area have been covered to an average depth of approximately nine (9) feet. The material overlying the native soils is predominantly composed of reworked stony, sandy red soil derived from the Brunswick Formation. This is the material typically found in the block interiors. Bedrock is present at depths ranging from 2 to 15 feet across the site, trending deeper north of West Market Street toward Warren Street. The material that was used to fill the foundations of demolished buildings was composed of soil fill, building rubble and debris.

A great deal of trash has been dumped on the surface of the site over the years. This trash consists mainly of domestic garbage and automobile parts. Nothing of a serious hazardous nature (e. g. drums, industrial waste, etc.) was found on the sites.

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3.0 SITE INVESTIGATION

Preliminary site inspections identified several areas of potential environmental concern on Sites C and E. A number of tanks were located during the preliminary investigation based on a surface inspection of the area. The presence of tank fill ports and vent pipes along the sidewalks were used to identify tank locations. Surface debris was taken as an indication of potential problems associated with the types of material used as fill. Several areas of concern were identified based on a review of aerial photographs and other conditions. The potential areas of concern included the following: surface staining and refuse piles in vacant lots on blocks 408 and 409, and the presence of auto repair shops and garages on blocks 404 and 407. The results of the previous investigation and cleanup completed on adjacent sites provided the basis for assessment of probable subsurface conditions based on the results of this field program. Experience from these previous programs also provided the basis for selection of investigative methods best suited for this area.

The following sections detail the investigative procedures used to evaluate each of these concerns, and the findings of this phase of the investigation.

3.1 BLOCK PERIMETER TRENCHING

In previous work in the adjacent development sites, most of the underground storage tanks (USTs) were located below or adjacent to sidewalks. Aerial photos confirm that much of the seven-block area was occupied by long narrow houses with limited access to the sides and backyards. This type of arrangement made it necessary to locate heating oil tanks in front of the houses to allow access for filling.

The most practical method for locating tanks was exploratory trenching. The trenches were installed using a rubber-tire backhoe along the former block perimeters. Since much of the property was unoccupied, perimeter trenching was almost complete. Figure 2 illustrates the completed trenching program.

3.2 BLOCK INTERIOR SURVEY

The interior portion of each block was investigated using a three-fold approach. First, an electromagnetic survey was conducted to locate tanks, drums or other large metallic objects in the subsurface. Electromagnetic "hot spots" were then investigated through the use of soil borings, test pits and trenches.

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In addition to the electromagnetic survey, a general site-wide soil boring and test pit grid survey was conducted. Due to obstructions such as buildings, fences and walls, the 50-foot grid survey had to be modified to assure good coverage of the site. Each soil boring and test pit was logged and the characteristics and composition of soils noted.

Cuttings from each boring were field screened using a portable photoionization organic vapor detector and selected samples were kept for laboratory analysis. Soil boring logs and test pit logs are included as Appendix A. The locations of the soil borings and test pits are indicated on Figure 2.

All of the electromagnetic "hot spots" observed in the block interiors were further evaluated during the subsequent drilling and test pit installation program. These were found to be caused by metallic debris such as old pipes, auto parts and metal scrap.

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4.0 FINDINGS OF INVESTIGATIVE PHASE: AREAS OF ENVIRONMENTAL CONCERN

On the basis of the investigation described above, a number of areas of environmental concern have been identified at sites C and E. These include the locations of 25 improperly abandoned underground storage tanks and three (3) areas of contaminated soil. Each of these areas is illustrated on Figures 3 through 9 which provide detail maps of each block. The following sections detail the specific findings of the trenching, soil boring, and test pit programs in terms of these areas of concern. Areas of concern have been broken down according to development site and tax block.

4.1 UNDERGROUND STORAGE TANKS

A total of 25 underground storage tanks have been identified as a result of this study. Two (2) of these tanks appear to contain weathered gasoline and water; the remaining tanks all appear to contain varying quantities of water and/or fuel oil. Due to their sizes and to the fact that all of the tanks were associated with residences, none of the tanks are regulated under New Jersey's Bureau of Underground Storage Tanks (BUST) regulations.

4.1.2 Site C

BLOCK 403

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The tank locations identified on this block are illustrated on Figure 3. The perimeter trenching operation identified three (3) underground storage tanks on Block 403. One tank (T403-1) was not exposed due to its position under the corner of a yard belonging to an occupied residence. The tank does not appear to be connected to said dwelling. It appears that it was left in place during the demolition of a neighboring house, whose lot was then acquired by the owner of the existing dwelling. The existence of the tank was determined when trenching activities outside the fenced area uncovered the feed and return lines and the vent pipe for the tank.

Tank T403-2 is a 550-gallon heating oil tank underneath the sidewalk in front of an abandoned dwelling. Tank T403-3 is a 500-gallon tank, possibly containing gasoline, found at one corner of an empty lot. This tank is believed to have been associated with a former residence at this now vacant lot.

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Tank locations on Block 408 are illustrated on Figure 4. Four (4) USTs have been identified on block 408. Tank T408-1 is a 550-gallon heating oil tank located approximately mid-block along Newark Street. Tank T408-2 is a 1000-gallon kerosene tank located along Newark Street toward Warren Street. Tank T408-3 is a 550-gallon gasoline tank located in a vacant lot approximately 20 feet from T408-2, in an area of extensive PHC contaminated soils (described below). Tank T408-4 is located under new sidewalk at the corner of Norfolk and Warren Streets. Due to the busy nature of the intersection and the restricted access to the tank area, the tank was not uncovered, and it was impossible to determine the amount and type of product, if any, remaining inside. All of these tanks are believed to be associated with former residential structures.

BLOCK 409

Tank locations on Block 409 are illustrated on Figure 5. Three (3) heating oil tanks have been identified on this block. Tank T409-1 is a 1000-gallon UST located near the corner of Wilsey and Academy Streets. Tank T409-2 is a heating oil tank estimated at 1500 gallons capacity, located in front of an abandoned dwelling on Lot 30 along Newark Street. Tank T409-3 is a 275-gallon heating oil tank that was formerly located in the rear basement of an abandoned house on Lot 19 along Wilsey Street. The house was demolished on or about July 10, 1992, with the tank still in the basement. The tank was subsequently excavated from the rubble and removed from the basement and placed a short distance from the former house, under the supervision of JMS personnel. The tank was observed to be empty of product and in good condition at the time of removal.

4.1.2 <u>Site E</u>

BLOCK 404

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Figure 6 illustrates the locations of the tanks identified on Block 404. Six (6) heating oil tanks were identified on this block. Four (4) are located in the basements of abandoned houses. Of these four, two (T404-2 and T404-3) have been determined to be 275-gallon oval tanks. Both of these were found along Academy Street. Due to the uncertain structural integrity of the dwellings in which they are located, and the lack of direct access from outside the dwellings, the other two (2) basement tanks (T404-5 and T404-6) were not directly investigated. However, it is reasonable to assume that they are also 275-gallon tanks similar to the others. Once the dwellings have been demolished these two (2) tanks will be addressed in detail.

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The two (2) remaining tanks were uncovered during trenching operations along Academy Street and School Street. Tank T404-1 is a 550-gallon tank located beneath the sidewalk in front of an abandoned house along Academy Street. Tank T404-4 is a 1000-gallon tank in front of an empty lot across from the elementary school. Both tanks contain heating oil.

In addition, the garage of an abandoned house along Academy Street (Lot 20) appears to be an area of concern. A sign indicates that the garage used to be an auto repair shop. There is a great deal of refuse in the garage, and the floor appears to be heavily stained with motor oil. Due to restricted access, further investigation of this area will have to be delayed until the structure is demolished and the debris removed.

BLOCK 405

Tank locations identified on Block 405 are illustrated on Figure 7. Five (5) USTs have been identified around the perimeter of this block. One, Tank T405-1, lies beneath the pavement in front of the recently demolished brick church along West Market Street. The tank is estimated to be of 1500 gallons capacity, and contains a small amount of No. 2 heating oil and water.

Due to the presence of underground utilities, including power lines and fiber-optic phone lines, the tank was not exposed.

The remaining tanks, T405-2 through T405-5, were exposed by trenching activities along Academy Street. Tanks T405-2 and T405-3 are both 550-gallon heating oil tanks. Tank T405-3 appears to have leaked at some time in the past, but based on the trenching activities it appears that a limited area has been affected, and the volume of soils that will require removal is limited.

Tank T405-4 is a 1000-gallon heating oil tank. Stained soils near the fill port indicate that some spillage has occurred, but again the area affected appears to be limited.

Tank T405-5 is an odd-sized tank, estimated at 850 gallons capacity. There is no evidence of leakage around this tank, which contains heating oil.

BLOCK 406

Tank locations on Block 406 are illustrated on Figure 8. Four (4) underground heating oil tanks have been identified along the perimeter of Block 406. Three (3) tanks, T406-1 through T406-3, were located along West Market Street in the immediate vicinity of buried utility lines, as described above. For this reason the tanks were not uncovered.

Tank 406-4 is a 550-gallon heating oil tank which was uncovered by trenching activities along Newark Street.

Figure 9 illustrates the locations of tanks on Block 407. No underground heating oil tanks were encountered during trenching activities along Block 407. Two (2) tanks have been visually identified, but both are attached to occupied dwellings.

4.2 CONTAMINATED SOIL AREAS

Seven (7) areas of contaminated soil apparently not associated with underground storage tanks were also identified as a result of this investigation. One additional area of suspect soil was identified on the basis of field conditions but sample analysis did not confirm significant levels of contamination. The results of the investigation conducted on each block are discussed in the following sections.

Soil samples were submitted for analysis on the basis of observed field conditions. Samples were analyzed for various combinations of parameters, including petroleum hydrocarbons (PHC), volatile organic compounds with a forward library search (VO+), base neutral extractable organic compounds with a forward library search (BN+), acid extractable organic compounds (AE), priority pollutant metals (PPM), polychlorinated biphenyls (PCBs), pesticides, cyanide and phenols. Analytical results were compared with the most stringent of NJDEPE's proposed cleanup standards for residential sites, in accordance with recent directions and recommended practices issued by the NJDEPE. Table 1 provides a summary of the proposed standards for all of the compounds identified in this investigation. Areas of contaminated soil for which remedial actions are necessary were defined on the basis of the proposed standards.

4.2.1 <u>Site C</u>

BLOCK 403

A total of fourteen (14) samples were collected on Block 403 (Figure 3). The samples were concentrated in the area of a vacant lot along Wilsey Street, where visual observation indicated that the area had been used for auto repairs and garbage disposal. Several test pits and trenches were installed in order to determine the subsurface impact of widespread surficial staining apparently caused by motor oil, transmission fluid, and brake fluid. Visual inspection of the trench profiles indicated that the surface staining did not penetrate to a significant depth, and the trench samples have confirmed a clean subsurface environment. At sample location 403-6 low levels of a number of BN compounds were identified at concentrations slightly exceeding the applicable standards. However, only relatively limited surficial soil removal will be necessary in most of this area.

One sample, 403-7, was collected from suspect fill material found in a relict basement adjacent to an existing structure. This sample yielded a lead concentration of 428 parts per million

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(ppm) and a trace of the BN compound chrysene, both of which are in excess of the applicable standards. This material will be excavated and removed for proper disposal. Details of the proposed remedial actions are discussed in Section 5.0.

The remaining accessible portions of Block 403 appeared not to have been subject to adverse environmental conditions. Trenches and test pits uncovered mixed fill and soil to a depth of approximately six (6) feet in some locations, but encountered no further evidence of contamination. Table 2 provides a summary of the analytical results for samples from this block. Laboratory data are provided in Appendix B.

BLOCK 408

Twenty-seven (27) samples were collected on Block 408. Of that total, twenty-two (22) were obtained from test borings, with the remaining five (5) being collected from exploratory trenches. Sample locations are depicted on Figure 4.

Several areas of concern had been previously identified on Block 408. These comprise an area of stained soil along Newark Street which extends toward a large brick building fronting on Norfolk Street, and an area of stockpiled soil near the corner of Newark and Warren Streets. Samples 408-2 through 4A, 6, 7 and 408-11 through 15 were collected from the area of the stained soil, which is reputed to be the result of illegal dumping of heating oil.

Analytical results for these samples are summarized on Table 3. The results have identified PHC, numerous BN compounds, and lead at concentrations exceeding the applicable standards. Field observations and analytical results indicate that contamination in this area extends to depths of between 6 and 9 feet. The total volume of contaminated soil in this area is estimated at 1950 cubic yards or 2600 tons. This material will be excavated and removed for proper disposal. Details of the proposed remedial actions are outlined in Section 5.0.

The area of stockpiled soils is immediately adjacent to the stained soils location discussed above. Three (3) samples were collected from the stockpile area. Two (2) samples, 408-20 and 408-21, were taken from test borings at a depth of 10.5 to 11.0 feet, and analyzed for PHC. The third sample, 408-PS, was taken from the top surface of the stockpile, and analyzed for Priority Pollutants Plus 40 (PP+40). Samples 408-20 and 408-21 yielded non-detect readings, but sample 408-PS indicated the presence of BN compounds and lead at concentrations in excess of the applicable standards. JMS proposes to conduct additional sampling, including waste classification sampling of the stockpile in order to determine if any of the stockpile can remain on site. Please refer to Appendix C for a description of waste classification sampling procedures and frequency.

of the remaining samples collected of Block 408, 408-16 yielded results in excess of applicable standards for PHC and benzo(b) fluoranthene. This sample was obtained adjacent to a back yard near a garage. It is likely that the contamination encountered in this sample is the result of a very localized oil spill related to auto repair, since the rest of the area appears not to have been affected. JMS proposes to remove a limited amount soil in the area of this sample, to be followed by post-excavation confirmatory sampling.

Sample 408-19 contained a number of BN compounds in excess of applicable standards. Again, contamination in this area appears to be relatively limited in extent. This soil will be removed for proper disposal. Please refer to Table 3 and Appendix B for sample results summaries.

BLOCK 409

Seven (7) samples were collected from Block 409 (Figure 5). Six (6) borings were installed on vacant areas of the block surrounding the church located on the corner of Warren and Wilsey Streets. Samples 409-1 through 409-6 were collected from the 10.5 to 11.0 foot depth range, and analyzed for PHC. The laboratory report indicates that no PHC compounds were detected above the analytical Method Detection Limit. One sample, 409-8, was collected from a trench installed along the wall of a garage fronting on Wilsey Street. The garage is currently being used by the City of Newark to store construction equipment and other vehicles. The sample was collected from the 3.5 to 4.0 foot depth interval, and analyzed for PHC and VO+15. While trace amounts of each parameter were detected, the results were far below the applicable standards. Refer to Table 4 and Appendix B for sample results summaries.

Despite the presence of extensive construction debris on the vacant portion of the block covered by samples 409-1 through 409-6, the exploratory program did not encounter any chemical contamination associated with the physical debris.

Based on the results of the soil sampling program conducted on this block, no additional soil removal is deemed necessary beyond that involved with the tank removal program.

4.2.2 Site E

BLOCK 404

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Six (6) samples from this block were submitted for analysis during the 1989 sampling episode. One additional sample was collected as part of the most recent phase of investigation. The sample locations are indicated on Figure 6.

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Samples B404-1 through 4 were collected during the 1989 investigation. The samples identified low levels of PHC, VO compounds and the pesticides dieldrin, DDT and helptachlor, all at concentrations well below the applicable standards. However, a number of BN compounds and the metals cadmium and lead were identified at concentrations exceeding the standards. The affected area is believed to be relatively restricted in extent. This material will be excavated and removed for proper disposal.

During the recent phase of investigation, Sample S404-2 was taken adjacent to tank T404-1 at a depth of 2.0 to 2.5 feet, and analyzed for PHC. Petroleum hydrocarbons were detected at 315 ppm, well below the standard of 10,000 ppm. Sample results are summarized on Table 5. Laboratory analytical reports are provided in Appendix B.

Additional sampling will be conducted as part of the tank removal program. Sample results may indicate that additional soil removal is warranted. Also, the former auto repair snop along Academy Street requires further investigation which has not been possible to date due to obstruction of the area by the remains of the former structure and construction debris. JMS proposes exploratory excavation of the former auto shop location. Investigative samples may be collected if field conditions warrant. Based on the results of any samples from this investigation, additional soil removal may be necessary.

BLOCK 405

One sample was collected from this block during the 1989 investigation. Four (4) additional samples were collected during the most recent phase of investigations. Four (4) samples, 405-1 through 405-4, were obtained from the exploratory trenches installed along the block perimeter. The original sample designated B405-1 was collected from the portion of the site now occupied by the construction yard. Please refer to Figure 5 for sample locations. The recent samples were analyzed for PHC, with one sample (405-4) also being analyzed for BN+15. The original sample was analyzed for priority pollutants plus 40 (PP+40). None of these samples identified any contaminants at concentrations meeting or exceeding applicable standards. Sample results are summarized on Table 6, laboratory analytical reports are included in Appendix B.

Based on these results, we do not anticipate any soil removal in addition to that associated with the tanks identified on this block.

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BLOCK 406

Fourteen (14) samples were collected on Block 406. Eleven (11) were obtained from test borings at varying depths, and three (3) were obtained from exploratory trenches along the block perimeter (Figure 8). Sample results are summarized on Table 7. Laboratory analytical reports are provided in Appendix B. All the samples were analyzed for PHC, with samples B406-6 and B406-9 also being analyzed for Priority Pollutant Metals. Scattered low level PHC concentrations were detected, all far below the applicable standards.

Sample B404-6 contained 209 ppm lead, which exceeds the applicable standard. The concentration is relatively low and is believed to represent a relatively restricted occurrence. The B406-6 area will be excavated to remove the affected soil. Details of the proposed remedial action are discussed in Section 5.0.

BLOCK 407

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A total of eight (8) samples were submitted for analysis from Block 407. Sample locations are depicted in Figure 7. All the samples were analyzed for PHC, with the exception of samples 407-1 and 407-2, which were analyzed for PP+40. The Priority Pollutant analysis was specified for these two (2) samples due to the presence of an odor suggesting pesticides which was encountered while installing a trench along Academy Street. However, neither sample indicates the presence of any pesticides in this area. In fact, no contaminants were identified at concentrations meeting or exceeding the applicable standards in any of the samples collected on this block. Sample data are summarized on Table 8, laboratory analytical reports are included in Appendix B. Based on these results, no remedial activities are proposed for this area at this time.

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5.0 DISCUSSION AND RECOMMENDATIONS

;. ;. , As a result of this investigation, 25 improperly abandoned underground storage tanks were identified. In addition, seven (7) areas of contaminated soil unrelated to underground storage tanks have also been identified. None of the tanks are subject to NJDEPEs underground storage tank regulations. However, their presence represents a liability to the site and they may have been, and continue to be, sources of contamination. Therefore, all tanks will either be removed or properly abandoned in place as appropriate.

The seven (7) areas of contaminated soil are contaminated with various combinations of PHC, BN compounds, lead and in one case, cadmium. Generally, the concentrations of contaminants are not extremely high. However, in each case residential soil cleanup standards have been exceeded and therefore, some remedial action is necessary. It is significant to note that in none of these areas do hazardous waste conditions exist.

Tank removal and abandonment will be conducted as follows: First, the tank in question will be uncovered or otherwise made accessible by Milltown Drilling and Excavation (MDE). product removal, tank entry, and cleaning will be performed by representatives of L&L Oil Service, Inc. If necessary, MDE employees will create additional openings in the tank so that it may be completely emptied. The tanks will then be entered and cleaned. Most of the tanks in question are #2 heating oil tanks, and the necessary health and safety precautions are minimal. (2) tanks, however, appear to contain gasoline, and additional precautions may be necessary. In these cases, both JMS and MDE will be present with the necessary equipment and materials to secure the tank area in order to assure safe working conditions. Once the tanks have been emptied and cleaned, they will be loaded onto a dump truck and transported to a scrap dealer for disposal. All tank removal and subsurface evaluation work will be performed by personnel certified by NJDEPE Bureau of Underground Storage Tanks.

Following the removal of each tank, contaminated soil will be excavated and removed, if necessary. All contaminated soil will be stockpiled on, and covered with, 6-mil polyethylene sheeting at a designated location on site. Following the removal of any contaminated soil, a minimum of four (4) post-excavation confirmatory samples will be collected from the base of the sidewalls of the excavation. If extensive soil removal is necessary at any location, additional post-excavation confirmatory samples will be collected. In order to maintain site safety, all excavations will be closed immediately following the collection of post-excavation samples. Excavations will be backfilled with existing site materials. All post-excavation samples will be analyzed for PHC. If the PHC concentration of any sample exceeds 500 ppm, the sample will also be analyzed for VO+ and BN+. Stockpiled waste soil will be analyzed for waste characterization purposes and arrangements will be made for its proper off-site disposal.

At this time it is impossible to predict the ultimate volume of soil that will have to be removed as a result of contamination caused by the tanks. However, for purposes of estimation, we have used past experience in the area to arrive at an estimate of approximately 1000 tons for the total contaminated soil associated with the 25 tanks.

Due to the access problem, JMS proposes to abandon four (4) of the tanks in place. The tanks to be abandoned in place are: T405-1, T406-1, T406-2 and T406-3. These tanks are located along West Market Street in the immediate vicinity of buried power and fiber-optic lines. In order to reduce the risk of property damage or injury to site personnel, these tanks will be left in After the tanks have been emptied and cleaned, they will be filled with concrete and the excavation will be backfilled. If contaminated soils are encountered in the tank area, as much soil as possible will be removed without jeopardizing the integrity of the underground utility lines. One additional tank (T408-4) is located at the corner of Warren and Norfolk Streets. The tank is located under new sidewalk in close proximity to a busy intersection, with limited access to the tank location. presence of underground utilities is suspected, and it would be prudent to minimize the disturbance of the area. Therefore, this tank may also be abandoned in place.

Each of the seven (7) areas of contaminated soil will be excavated and removed. In each location, post-excavation confirmatory soil samples will be collected to verify the complete removal of contaminants to the applicable cleanup standards. The following table summarizes each of these areas:

AREA	TOTAL TONNAGE	NO. POST-EX. SAMPLE	POST-EX. SAMPLE PARAMETERS
408-2	. 2600	12	PHC, BN+, Pb
408-16	135	5	PHC, BN+
408-19	120	5	BN+
403-6&7	645	11	BN+, Pb
404-2	65	5	BN+, Cd, Pb
406-6	160	6	Pb

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Following the receipt of analytical results confirming the removal of contaminants to acceptable levels, all excavations will be backfilled using existing site materials. Following the backfilling of the excavations, a final report documenting the completion of all remedial activities and the final environmental condition of the site will be prepared. The report will include the following:

- o Description of all remedial activities;
- o Tabular summaries of post-excavation sample results;
- o Laboratory analytical reports;
- o All appropriate quality assurance/quality control documentation; and
- o A summary of the post-remedial environmental quality of the site.

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6.0 ESTIMATED REMEDIAL COSTS

1. TANK REMOVAL/ABANDONMENT

TANK REMOVAL

Backhoe/Operator, 5 days @ \$600/day \$	3,000
Dump truck/Operator, 5 days @ \$450/day	2,250
Vac. truck/Operator, 5 days @ \$1000/day	5,000
Waste product disposal, 7000 gal @1.00/gal	7,000
Sampling/Supervision, 5 days @ \$500/day	2,500

TANK ABANDONMENT

Delivery of 20 yds. cement 1,200

SAMPLE ANALYSIS

100-150 PHC @ \$75	7,500 - 11,250
25-40 BN+ @ \$400	10,000 - 16,000
25-40 VO+ @ \$325	8,125 - 13,000

SUBTOTAL

\$44,375-64,000

2. CONTAMINATED SOIL EXCAVATION+STOCKPILING

Excavator/Operator-5 days @\$1000	\$ 5,000
Backhoe/Operator-5 days @\$600	3,000
2 Dump trucks/Operator-5 days @\$450/ea.	4,500
Dozer/Operator-3 days @\$750	2,250
Sampling/Supervision-5 days @\$800	4,000
Equipment/Supplies-5 days @\$200	1,000
Sample Analysis	
17 PHC @\$70	1,190
38 BN+ @\$400	15,200
34 Pb @\$40	1,360
5 Cd @\$40	200
5 Waste Characterization @\$1400	7,000

BACKFILLING

SUBTOTAL	\$ 48,300
Dozer/Operator-2 days @\$750	1,500
Dump truck/Operator-2 days w@\$450	900
Backhoe/Operator-2 days @\$600	\$ 1,200

KH0V005879

3. WASTE SOIL DISPOSAL *

Tanks - 1,000 tons Contaminated Soil Areas - 3725 tons 4725 tons @\$40-75/ton **

189,000 - 354,375

- * We assume the K. Hovnanian will choose to contract directly with a disposal firm for disposal of this material
- ** low cost scenario assumes material can be used as landfill cover locally

4. PROFESSIONAL SERVICES

2.

Project Management Data Analysis Report Preparation \$ 6,000 6,000 8,000

SUBTOTAL

20,000

ESTIMATED PROJECT TOTAL \$301,675 - 486,675

KH0V005880

7.0 QUALITY ASSURANCE/QUALITY CONTROL

Throughout this investigation, strict measures were taken to assure the validity of all analytical data and the investigation findings. All samples were collected in accordance with JMS standard sampling procedures which have been approved by NJDEPE for numerous similar investigations. These procedures are outlined in Appendix C.

All analyses were performed by Envirotech Research, Inc. of Edison, New Jersey (NJDEPE certified laboratory No. 12543). A summary of analytical methodologies is provided in Appendix C. Complete laboratory quality assurance/quality control (QA/QC) documentation will be kept on file for review as necessary.

KH0V005881

8.0 CONCLUSION

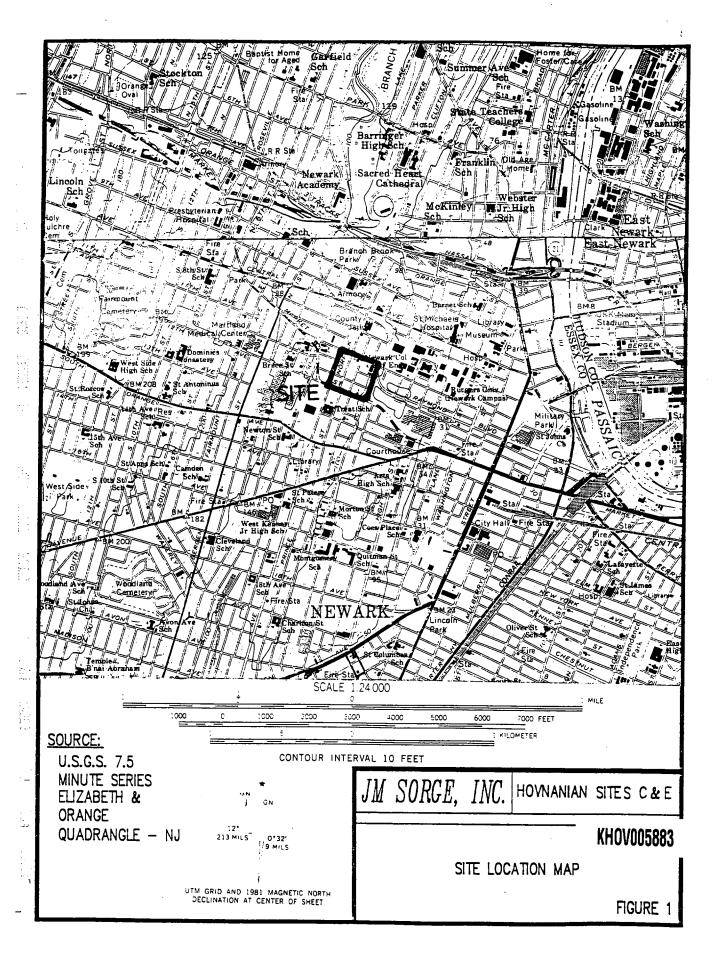
...

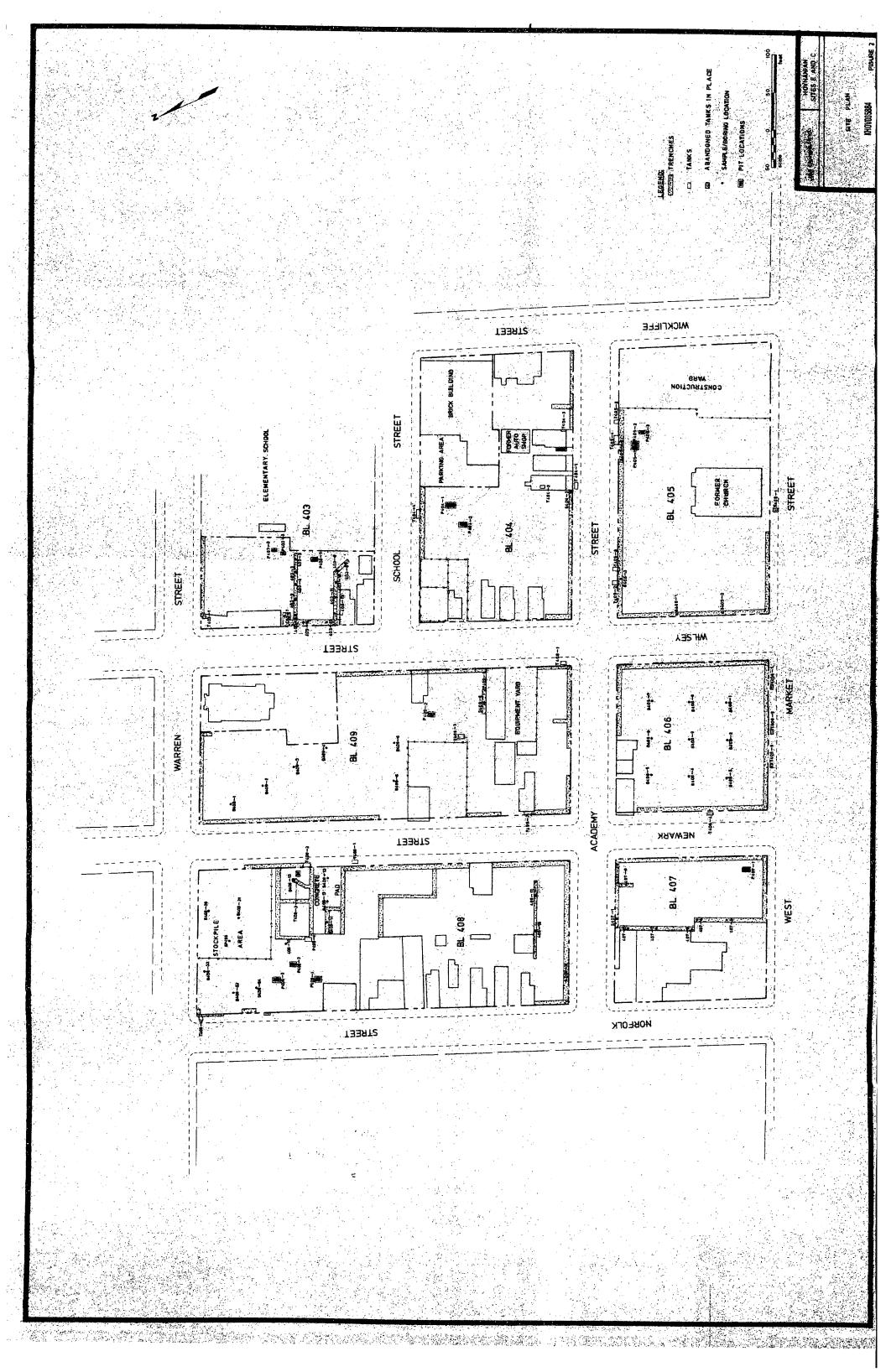
As a result of this investigation, a number of areas of environmental concern have been identified on this site. The areas of concern include improperly abandoned underground storage tanks, as well as areas of contaminated soil not associated with tanks. No hazardous waste conditions have been identified. However, the tanks and the contaminated soil areas represent environmental liabilities which must be addressed.

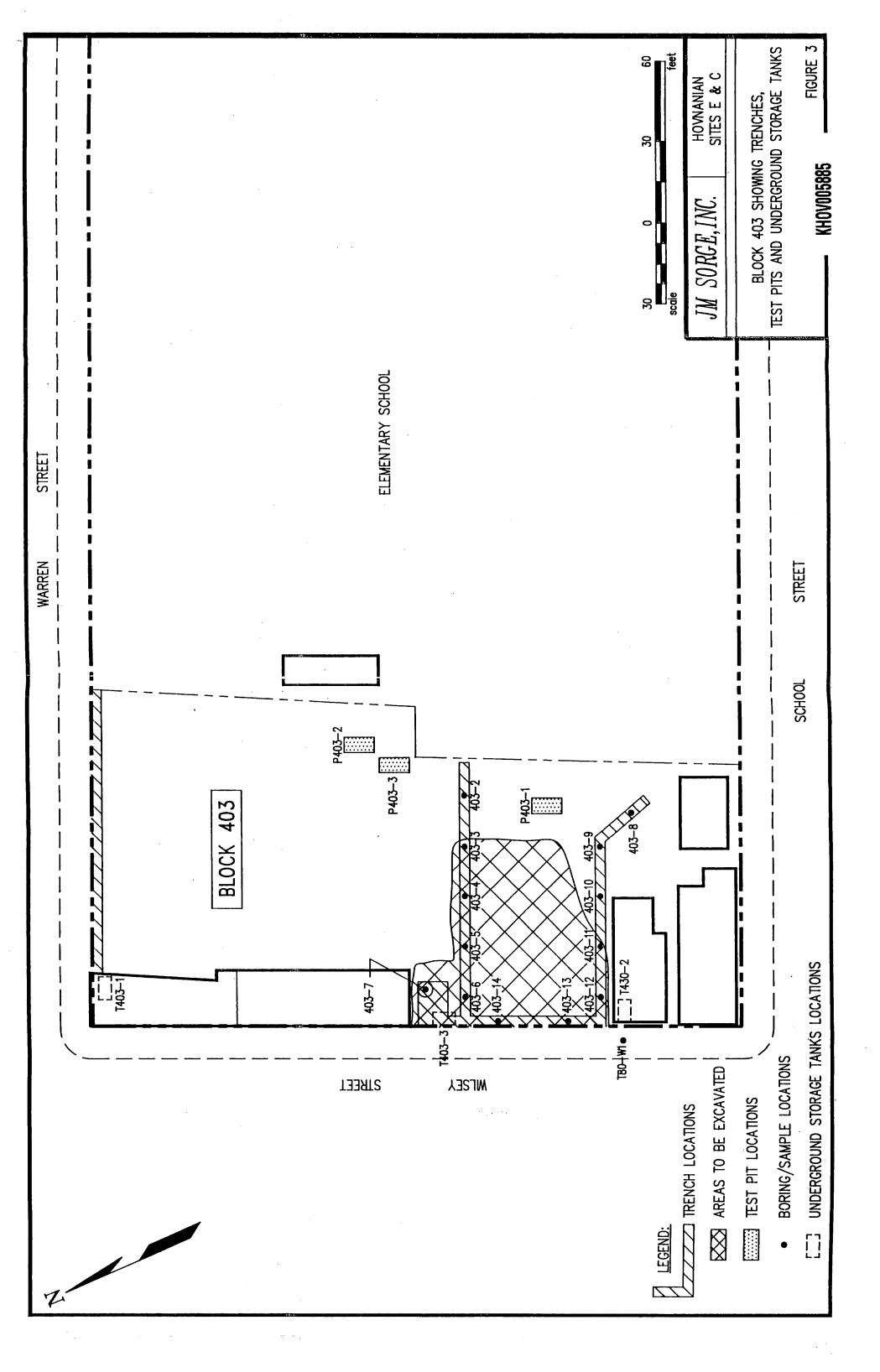
Based on the findings of this investigation, a remedial action plan has been developed. The plan calls for the removal and/or proper abandonment-in-place of all of the tanks and the excavation of any contaminated soil associated with them. The Plan also provides for the removal of the contaminated soil areas which are not related to the tanks. All soil removal activities will be followed by the collection and analysis of post-excavation samples to confirm the complete removal of contaminants to appropriate cleanup standards.

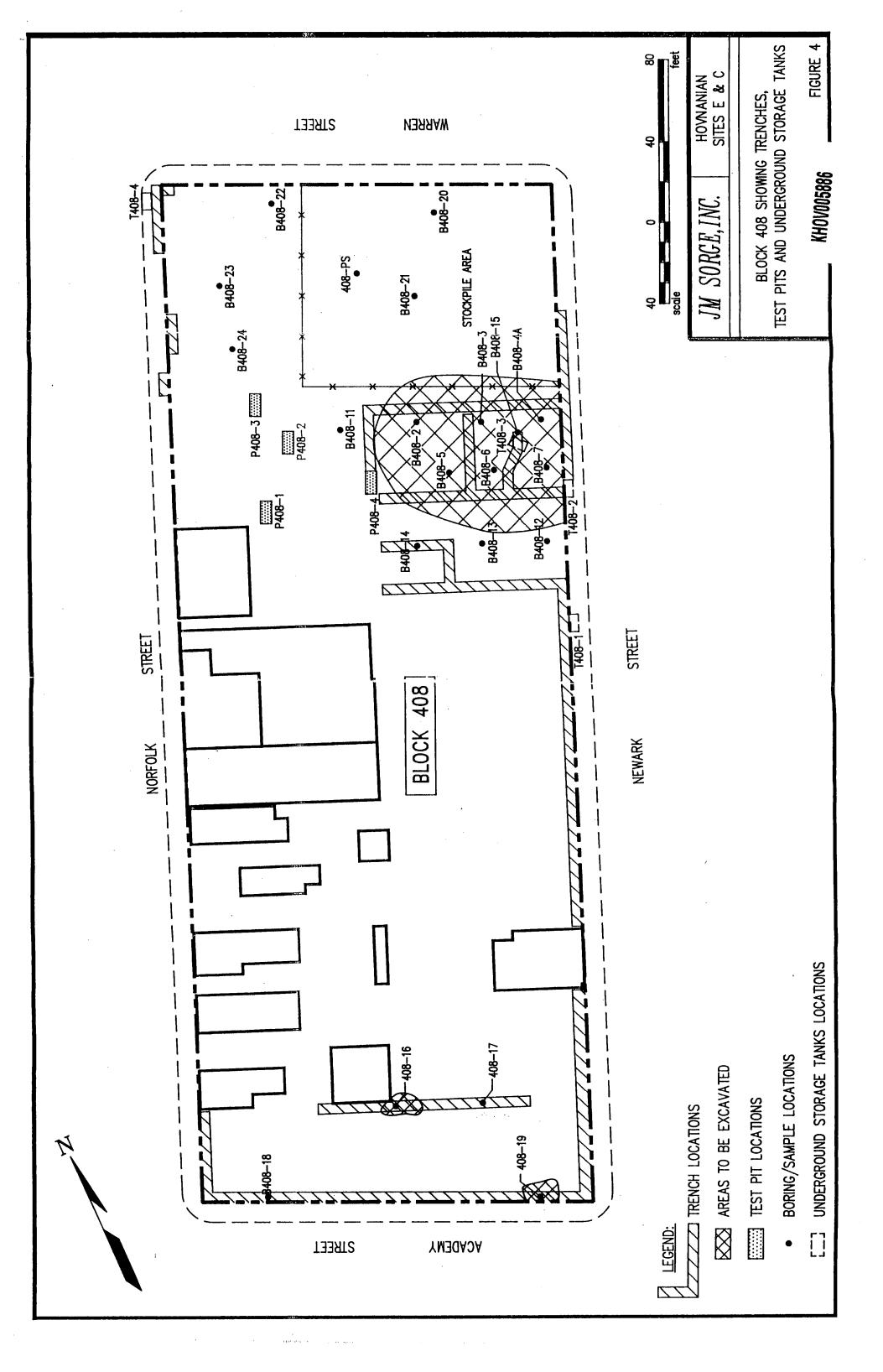
The goal of the proposed remedial action is to remove all soils containing contaminants at concentrations meeting or exceeding the most stringent NJDEPE proposed cleanup standards for residential sites. Implementation of the remedial action will bring all known areas of contamination into compliance with the applicable standards and render the site acceptable for residential development.

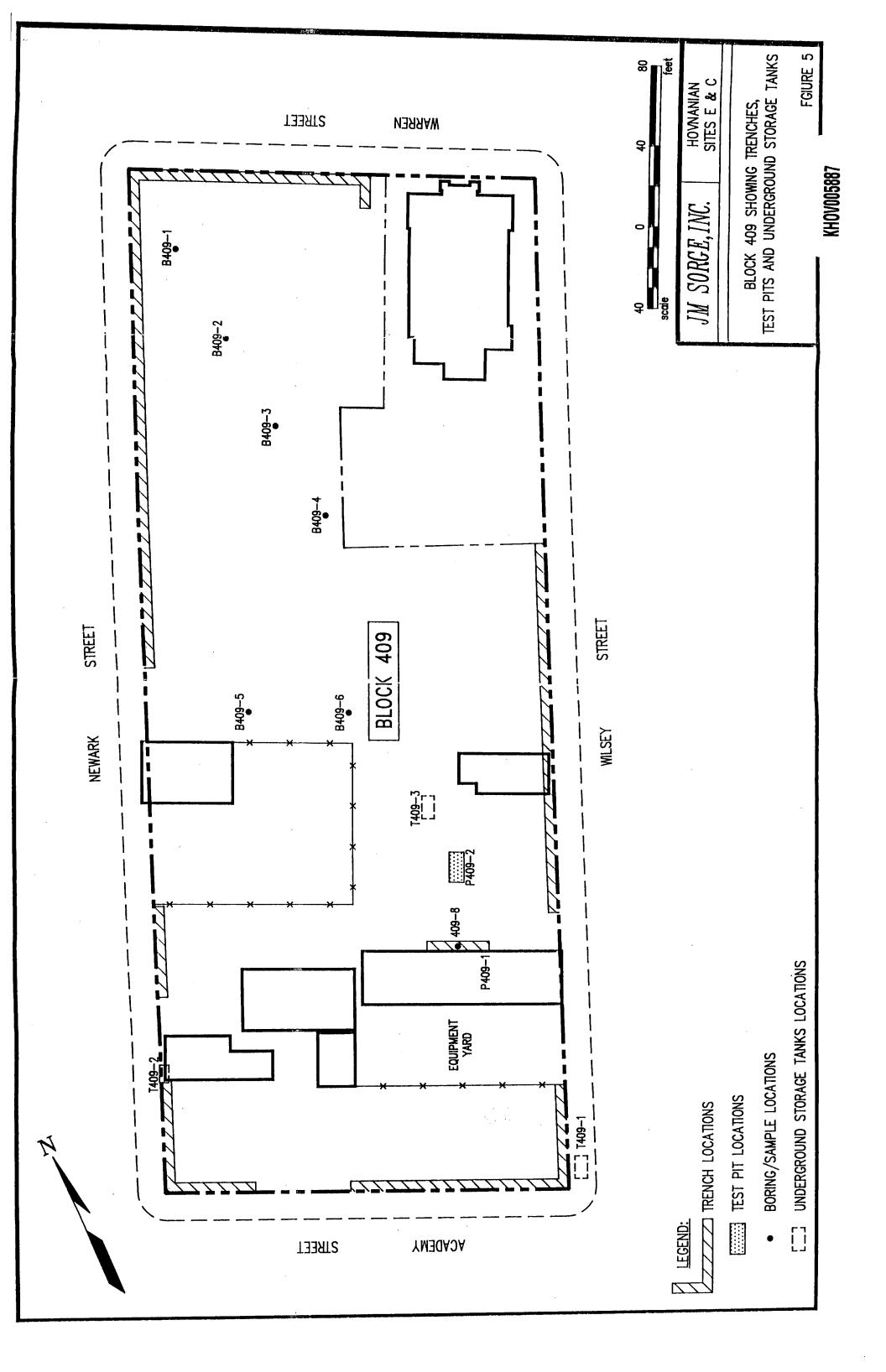
KH0V005882

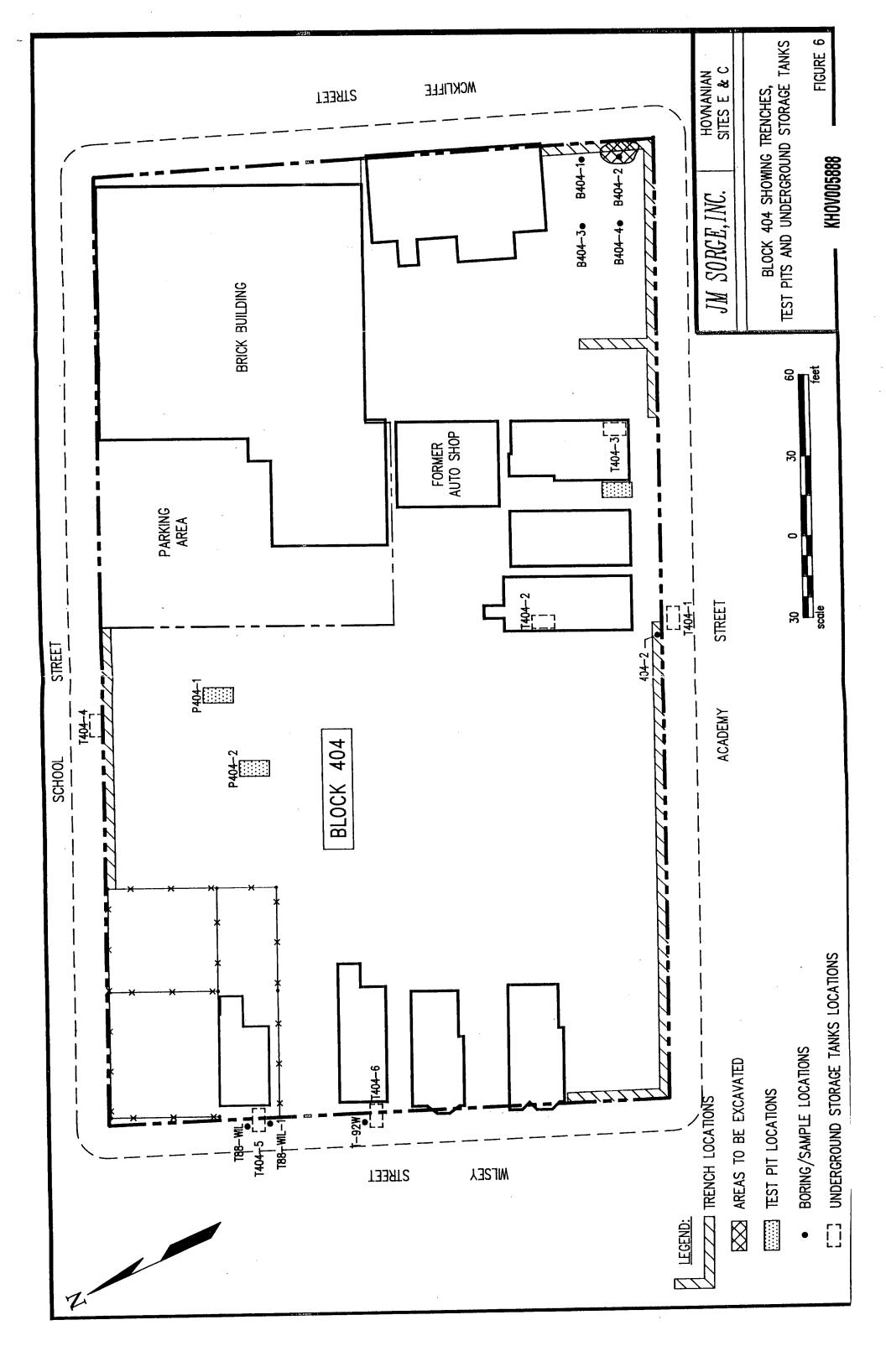


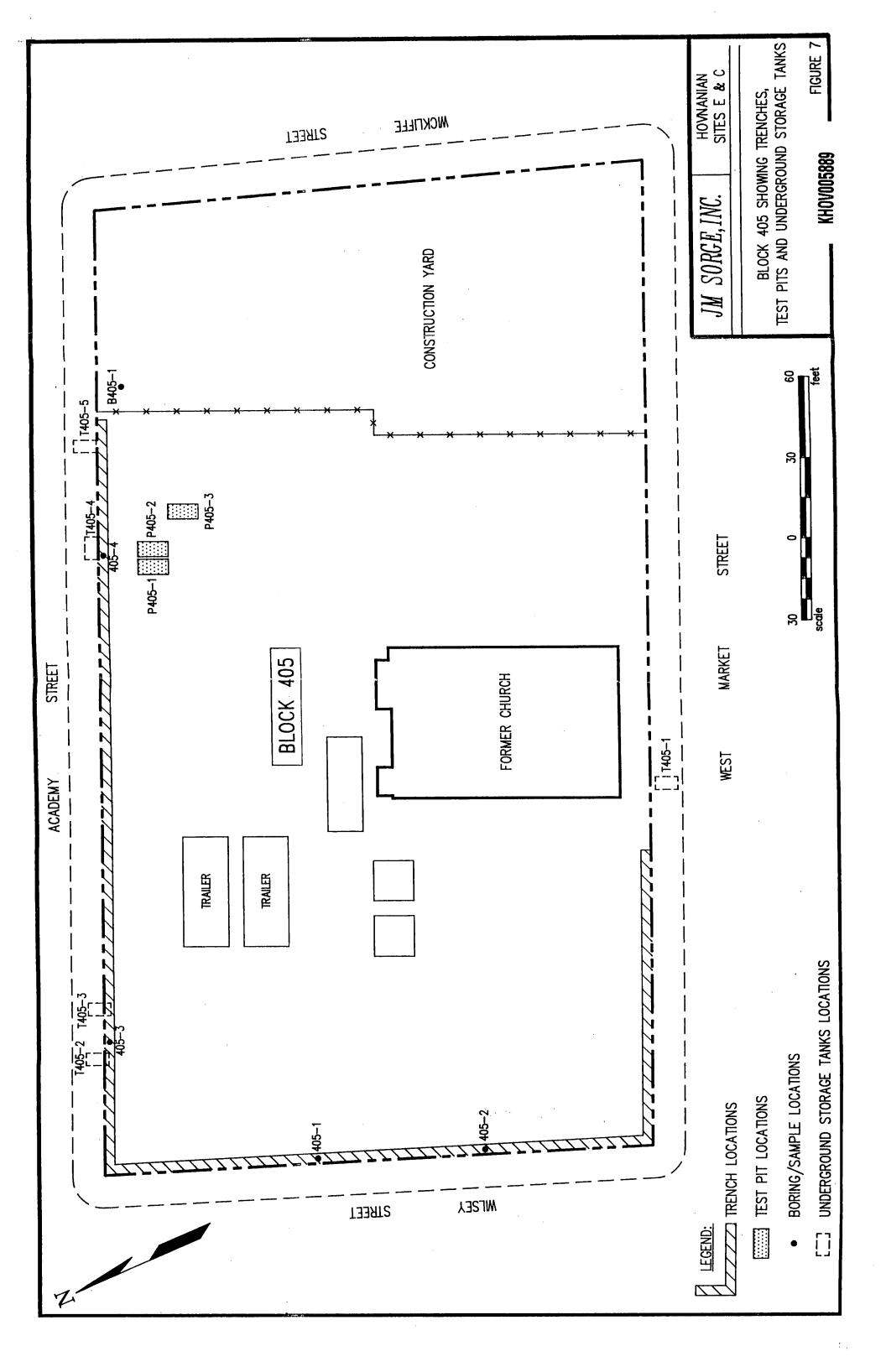


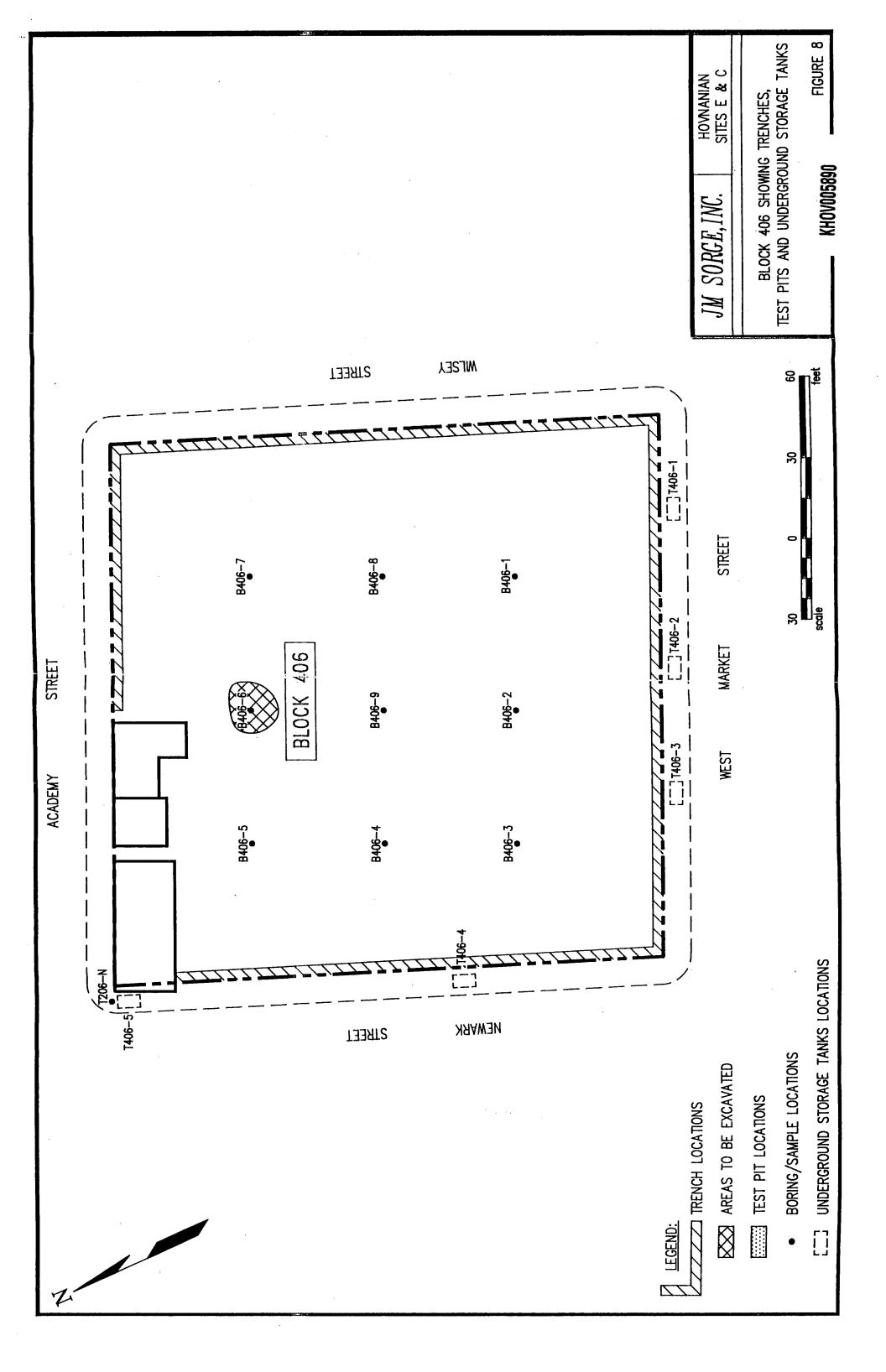












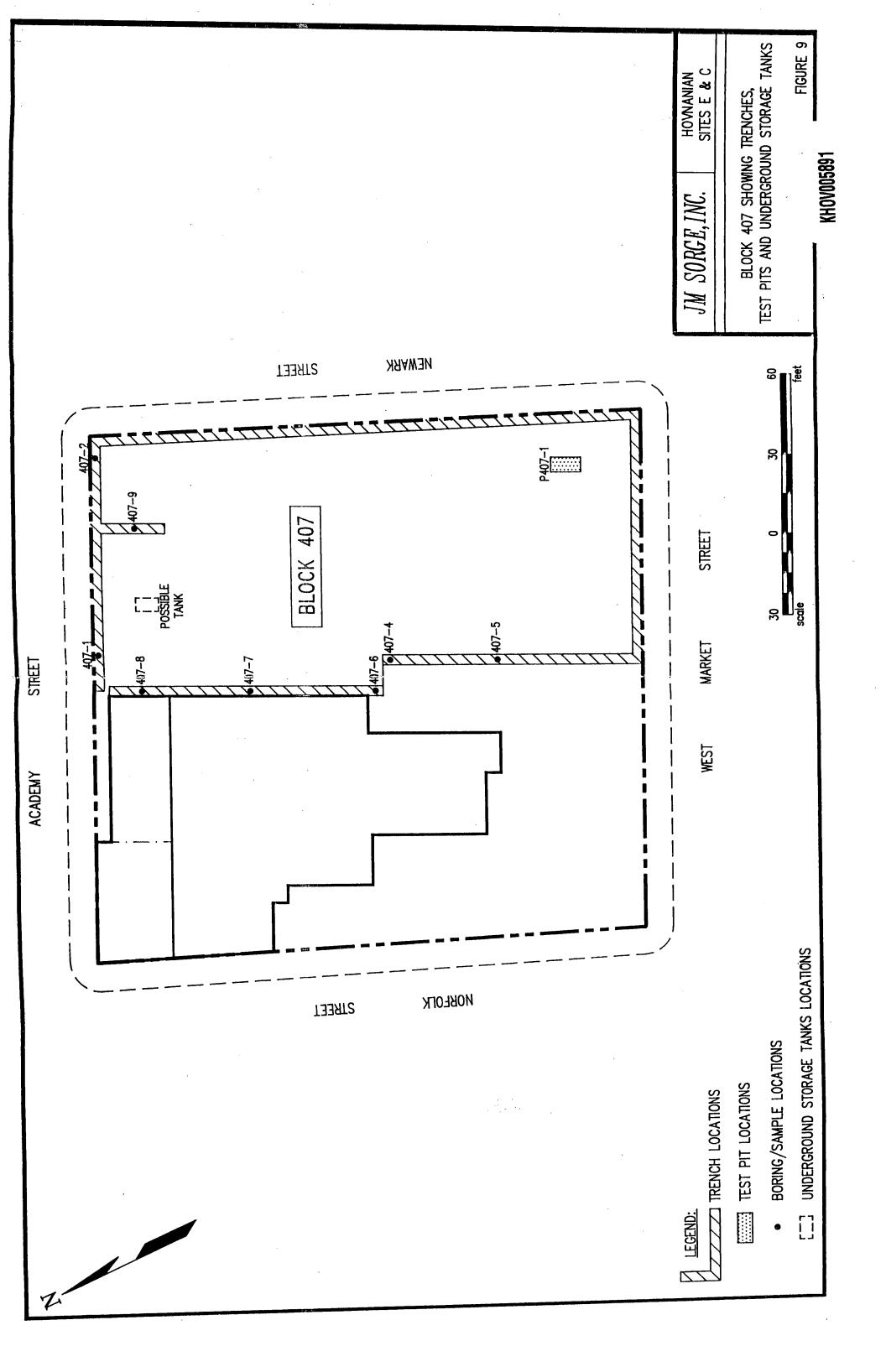


TABLE 1

COMPOUND	ACTION LEVEL
VOLATILE ORGANICS	
ACETONE	50
ACROLEIN	NA
ACRYLONITRILE	1
BENZENE	1.
BROMOFORM	1
BROMODICHLOROMETHANE	NA
BROMOMETHANE	1
2-BUTANONE	50
CARBON TETRACHLORIDE	1
CHLOROBENZENE	1
2-CHLOROETHYLVINYL ETHER	NA
CHLOROFORM	1
CHLOROMETHANE	10
DIBROMOCHLOROMETHANE	1
1,2-DICHLOROBENZENE	NA
DICHLOROBROMOMETHANE	1 🛝
1,1-DICHLOROETHANE	1
1,2-DICHLOROETHANE	1
DICHLOROETHYL ETHER	NA
1,1-DICHLOROETHYLENE	10
1,2-DICHLOROETHYLENE	50
1,2-DICHLOROPROPANE	NA
1,3-DICHLOROPROPENE	1
ETHYLBENZENE	100
4-METHYL-2-PENTANONE	50
METHYLENE CHLORIDE	10
STYRENE	23
1,1,1,2-TETRACHLOROETHANE	1
1,1,2,2-TETRACHLOROETHANE	1
TETRACHLOROETHYLENE	1
TOLUENE	500.000

TABLE 1

COMPOUND	ACTION LEVEL
,	
1,1,1-TRICHLOROETHANE	50.000
1,1,2-TRICHLOROETHANE	1
TRICHLOROETHYLENE	1.000
TRICHLOROFLUOROMETHANE	NA
VINYL CHLORIDE	1
XYLENES (TOTAL)	10
BASE NEUTRALS	
CaPAH COMPOUNDS	
BENZO(A) ANTHRACENE	0.66
BENZO(A) PYRENE	0.66
BENZO(B) FLUORANTHENE	0.66
BENZO(K) FLUORANTHENE	0.66
CHRYSENE	0.66
DIBENZO(A,H) ANTHRACENE	0.66
INDENO(1,2,3-C,D)PYRENE	0.66
NON-CaPAH COMPOUNDS	
ACENAPHTHENE	100
ANTHRACENE	500
BENZIDENE	NA
BENZO(GHI) PERYLENE	0.66
BIS(2-CHLOROETHYL) ETHER	1
BIS(2-CHLOROISOPROPYL) ETHER	10
BIS(2-ETHYLHEXYL) PHTHALATE	49
BUTYL BENZYL PHTHALATE	100
DI-N-BUTYL PHTHALATE	100
DI-N-OCTYL PHTHALATE	100
1,2-DICHLOROBENZENE	50
1,3-DICHLOROBENZENE	100
1,4-DICHLOROBENZENE	100
3,3'-DICHLOROBENZIDENE	2

TABLE 1

COMPOUND	ACTION LEVEL
DIETHYL PHTHALATE	50
DIMETHYL PHTHALATE	50
2,4-DINITROTOLUENE	1
2,6-DINITROTOLUENE	NA
FLUORANTHENE	500
FLUORENE	100
HEXACHLOROBUTADIENE	50
HEXACHLOROBENZENE	0.42
HEXACHLOROCYCLOPENTADIENE	100
HEXACHLOROETHANE	100
ISOPHORONE	10
MIREX	NA
NAPHTHALENE	100
N-NITROSODIPHENYLAMINE	100
N-NITROSODIMETHYLAMINE	NA
N-NITROSODI-N-PROPYLAMINE	0.66
NITROBENZENE	1
PHENANTHRENE	NA
PYRENE	500
1,2,4-TRICHLOROBENZENE	100
ACID EXTRACTABLE COMPOUNDS	
2-CHOROPHENOL	50
4-CHLORO-3-METHYL PHENOL	100
2,4-DICHLOROPHENOL	10
2,4-DINITROPHENOL	10
DINOSEB	NA
PENTACHLOROPHENOL	100
PHENOL	50
2,4,5-TRICHLOROPHENOL	50
2,4,6-TRICHLOROPHENOL	50

TABLE 1

COMPOUND	ACTION LEVEL
PRIORITY METALS	
ANTIMONY	14
ARSENIC	20
BARIUM	600
BERYLLIUM	2.
CADMIUM	1
CHROMIUM	AN
COPPER	600
LEAD	100
MERCURY	14
NICKEL	250
SELENIUM	1
SILVER	40
THALLIUM	2
VANADIUM	380
ZINC	1500
PETROLEUM HYDROCARBONS	10000
POLYCHLORINATED BIPHENYLS	0.45
PESTICIDES	
ALDRIN	0.04
CARBOFURAN	NA
CHLORDANE	NA
DEMETRON	NA
DIELDRIN	0.042
4,4'-DDE	2
4,4'-DDT	2
4,4'-DDD	3
ENDOSULFAN	3
alpha-ENDOSULFAN	NA

TABLE 1

NJDEPE PROPOSED SOIL CLEANUP STANDARDS FOR RESIDENTIAL SITES

COMPOUND	ACTION LEVEL

beta-ENDOSULFAN	NA
ENDOSULFAN SULFATE	NA
ENDRIN	17
HEPTACHLOR	0.15
HEPTACHLOR EPOXIDE	NA
LINDANE	0.52
MALATHION	NA
METHOXYCHLOR	280
TOXAPHENE	0.62
HERBICIDES	· · · · · · · · · · · · · · · · · · ·
ATRAZINE	NA
2,2-DICHLOROPROPIONIC ACID	NA
2,4-D	NA
DIQUAT	NA
ENDOTHALL	NA
2,4,5-TP	NA
TCDD	NA .
OTHER	
ACRYLAMIDE	NA
ALACHLOR	NA
ASBESTOS	NA
BENZYL ALCOHOL	50
alpha-BHC	NA
beta-BHC	NA
gamma-BHC	NA
CHLOROPYRIFOS	NA
CYANIDE	280
DI-N-PROPYLNITROSAMINE	NA
1,2-DIPHENYLHYDRAZINE	NA
EPICHLOROHYDRIN	NA

TABLE 1

NJDEPE PROPOSED SOIL CLEANUP STANDARDS FOR RESIDENTIAL SITES

ACTION LEVEL
NA
1100
NA
NA
NA

NOTES: NA - no new standard available

HOVNANIAN TABLE 2

SAMPLE RESULTS SUMMARY SITE C - BLOCK 403

THE PROPERTY OF THE PROPERTY O	CG (Ppb) PRIDE ROETBANE ARS	T-80W1	403-1	403-2	403-3	403-4	C-E07	403-6	• •	ck 403	
1,12,4,6,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0,4,1,9 1,0	G (PPb) Briog Roefsane Ars	FOR 402									
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	G (ppb) Ride Rotsane Ans	*** 4001	Block 403	Block 403	Block 403	Block 403	Block 403	Block ave			_
Name	ANICS (ppb) SHORIDE SLORGETBANE PEAKS	5.5-6.0	3.0-3.5	3.0-3.5	3.0-3.5	3.0-3.5	3.0-3.5	3.0-3.5	. ?	2,70	
NATIONALISE (EDRA) NA	HICE (PPb) HCRIE BLORIDE BLOROETBANE PEAKS	8/16/89	07/06/92	07/07/92	07/07/92	07/01/92	07/01/92	07/01/92	62	76//0	٦
10 10 10 10 10 10 10 10	HETHYLENE CHLORIDE 1,1,1-TRICHLOROETHANE 1DENTIFIED PEAKS UNRNOWN PEAKS	M.A.	RA	NA	NA	ď.	Y	٥	ø		Ę
NAME	1,1,1-TRICELOROETBANE IDENTITIED PEAKS Unriour Peaks							210	,		-
11D	IDENTIFIED PEAKS UNKNOWN PEAKS							•			
HENE NA	UNKNOWN PEAKS							9 1		2 9	
NA								2		2	
NEW PARTIES	BASE NEUTRALS (DDb)	NA		Į.	AN.	NA NA	МА				
NO	CAPAB COMPOUNDS					•		0.80		170	י
HD H	BENZO(A) PYRENE		WD							480	ר
ND N	Benzo(B) Fluoranthene		MD					0 0 4		9 9	, ,
ND N	BEN30(K) FLUORANTHENE		QN Q					0 0		980	,
ND 140 140 150 J 150	CHRYSENE		QN					2 2		160	ר
ND 140 ND 140 ND 140 ND 150 J 450 ND 1200 J 1200 122000 ND 1200 J 1200 ND N	DIBEN2O(A, H) ANTHRACENE		NO					6.5		370	,
Na	INDENO(1,2,3-C,D)PYRENE		Q					;		:	
ND	NON-CAPAR COMPOUNDS							:		5	•
Na			QN.					2			9
1300 3 1200 1200 1200 1200 1200 1200 1200 1200 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 12000 1	PERSONAL PERSONE		QM					620		00	,
1300 J	THE STATE OF TAXABLE COLOR		QX					CZ		210	י כי
132000 65600 BA B	PLOCES AND THE PROPERTY OF THE			מ				1200		1200	י כי
122000 65600 MA M				י				670		0	2
122000 65600 NA N	24287			b				1100		1300	ר
122000 152000								9		7900	
HA HA HA HA BA HA HA HA HA HA HA HA HA HA HA HA HA HA HA HA HA HA HD 6940 BD HD HD HD 1510	IDENTIFIED PEAKS		122000					CN	E1	15100	
NA NA NA NA NA NA NA NA	UNKNOWN PEAKS		00969								1
15 (Ppm) NA NA NA NA NA NA NA NA NA N	ACID EXTRACTABLE COMPOUNDS (ppb)	NA.	MA	YN.	KA	NA NA	NA	K K		œ.	
18 (Ppm) ND 6940 ND ND ND ND 1610 (Ppm) NA	The state of the s	42	KN.	NA NA	NA	HA	MA	NA.			
(PPm) ND 6940 ND ND ND 1610 ND ND ND 1610 ND ND NA	PRIORITY METALS (Ppm)	•	i							•	
(Ppm) ND 6940 ND ND ND 1610 NA NA NA NA NA NA NA	ARSENIC									13	
(PPH) ND 6940 MD ND ND 1610 ND ND ND 1610 ND ND ND 1610	CBROHIUM									7	
(PPM) ND 6940 ND ND ND 1610	COPPER									428	
(Ppm) ND 6940 ND ND ND 1610 NA NA NA NA NA NA NA NA	LEAD									ĕ	
(PPm) ND 6940 ND ND ND 1610 NA NA NA NA NA NA NA NA	MERCURY									10	
(PPm) ND 6940 ND ND ND 1610 ND ND ND ND 1610 ND	NICKEL									207	
(Ppm) ND 6940 ND ND ND 1610 NA NA NA NA NA NA NA NA NA											
(PPm) ND 6940 ND ND ND 1610 NA NA NA NA NA NA NA NA NA NA	SCINEX									운 :	
(PPM) ND 6940 ND ND ND 1610 NA <	PERONCE									2	
(ppm) ND 6940 ND ND NU							1	1610		42	
HA HA HA HA NA	PETROLEUH BYDROCARBONS (ppm)	QX	6940	Q x	Q A	2	3				
	PESTICICIDES/PCBs (ppb)	MA	МА	W.	Αŭ.	NA	Y _Z	Y.		2	

NOTES :

pps - parts per million

ppb - parts per billion

ND - not defected

NA - not maniyed

J - compound found at less the n method detection limit

B - compound also found in lab . blank

TABLE 2 (cont.)
SAMPLE RESULTS SUMMARY
SITE C - BLOCK 403

Area of Concern Area of Concern Date Sample Depth Oute Sampled VOLATILE ORGANICS (ppb) HETSYLENE GELORIDE 1,1,1-TRUCHOURDARINE	403-8 Block 403	403-9 Block 403	\$105k 403	Block 403	alock 401	Block 403	Block 403
CS (Ppb) ORIDE RORIBANE	Jock 403	107	Block 403				
			j		PAGE HOOTE		
	2.5-3.0	2.5-3.0	3.5-4.0	3.5-4.0	3.5-4.0	3.0-3.5	0.6-6.7
PATILE ORGANICS (PPb) HETHYLENE CHLORIDE 1,1,1-TRICHLOROFIHANE	07/07/92	07/07/92	01/01/92	07/01/92	07/01/92	01/0//85	76/10/10
METHYLENE CHLORIDE 1,1,1-TRICHLOROETHANE	HA	МА	42	K R	¥	Y,	ď Ž
1, 1, 1-TRICHLOROZIHANE							
IDENTIFIED PEAKS							
UNRNOWN PEAKS					į		
BASE NEUTRALS (ppb)	HA HA	NA	NA.		NA.	NA.	NA
CAPAB COMPOUNDS				;	ı		
BENZO(A) PYRENE				120	b		
BENZO(B) FLUORANTHENE				110	י פו		
BENZO(R) FLUORANTHENE				76	5		
CHRYSENZ				9	י פ		
DIBEN2O(A, B) ANTBRACENE				19	,		
INDENO(1,2,3-C,D)PYRENE				001	מ		
NON-CAPAH COMPOUNDS							
ANTERACENE				36	5		
BENZO(GHI) PERYLENE				7	ט		
BIS(2-ETHYLBEXYL) PHTHALATE				Q			
TUDBANTEENE				220	ם		
PBENANTBRENE				130	מ		
an an an an				200	ם		
				Ž			
IDENTIFIED PEAKS				1660			
UNRNOWN PEAKS							
ACID EXTRACTABLE COMPOUNDS (ppb)	MA	н	MA	М	VN	NA.	AII.
PRIORITY HETALS (ppm)	KN	KN	MA	KN.	M	NA	AN.
ABSENIC							
CBROMIUM							
COPPER							
LEAD							
MERCURY							
NICKEL							
BINC							
PRENOLS							
PETROLEUM BYDROCARBONS (ppm)	110	QR.	120	5110	36	ДИ	QN.
PESTICICIDES/PCBs (ppb)	4N	МА	VX	MA	RA	NA.	II.A

NOTES:

ppm - parts per million

ppb - parts per billion

ND - not detected

NA - not analysed

J - compound found at less tha

B - compound also found in lab

HOVNANIAN TABLE 3 SAMPLE RESULTS SUMMARY SITE C - BLOCK 408

Sample No.	408-PS	408-11A	408-11B	408-12A	408-12B
Area of Concern	Block 408	Block 408	Block 408	Block 408	Block 408
Sample Depth	3.0-3.5	2.0-2.5	5.0-5.5	2.0-2.5	5.0-5.5
Date Sampled	07/10/92	06/24/92	06/24/92	06/24/92	06/24/92
VOLATILE ORGANICS (ppb)		NA	NA	NA	NA
METHYLENE CHLORIDE	1.4 JB				
1,1,1 TRICHLOROETHANE	26 B				
1,1,1 1M20M20M2					
IDENTIFIED PEAKS	ND				
UNKNOWN PEAKS	ND				
ONGOWN 2 MAIS					
BASE NEUTRALS (ppb)		NA	NA	NA	NA
CaPAH COMPOUNDS					
BENZO(A) ANTHRACENE	830				
BENZO(A) PYRENE	850				
BENZO(B) FLUORANTHENE	930				
BENZO(K) FLUORANTHENE	760				
CHRYSENE	1000				
DIBENZO(A, H) ANTHRACENE	240 J				
INDENO(1,2,3-C,D)PYRENE	780				
NON-Capah Compounds					
ACENAPHTHENE	31 J				
ACENAPHTYLENE	60 J				
ANTHRACENE	140 J				
BENZO(GHI) PERYLENE	710				
BIS(2-ETHYLHEXYL) PHTHALATE	110 J				
DIBUTYL PHTHALATE	97 J				
FLUORANTHENE	1400				
FLUORENE	38 J				
	27 J				
NAPHTHALENE	720				
PHENANTHRENE	1800				
PYRENE	1000				
IDENTIFIED PEAKS	5130				
UNKNOWN PEAKS	5140				
UNKNOWN PLANTS					
ACID EXTRACTABLE COMPOUNDS (ppb)	ND	NA	NA	NA.	NA
PRIORITY METALS (ppm)		N A	NA	NA	. NA
ARSENIC	5.48				
CHROMIUM	20.9				
COPPER	33.7				•
LEAD	1200				
MERCURY	1.39				
NICKEL	19				
ZINC	451				
-					
CYANIDE	ND				
PHENOL	ND				
PETROLEUM HYDROCARBONS (ppm)	ND	ND	50	ND	170
PESTICIDES/PCBs (ppb)		NA	NA	NA	NA
4,4'-DDE	41				
4,4 -006	420				

NOTES :

ppm - parts per million

ppb - parts per billion NA - not analyzed

ND - not detected

J - compound found at less

than method detection lim it

B - compound also found in la b. blank

HOVNANIAN TABLE 3 (cont.) SAMPLE RESULTS SUMMARY SITE C - BLOCK 408

Sample No.	408-13A	408-13B	408-14A	408-14B	408-15
Area of Concern	Block 408	Block 408	Block 408	Block 408	Block 40
Sample Depth	2.0-2.5	5.0-5.5	2.0-2.5	5.0-5.5	9.0-9.5
Date Sampled	06/24/92	06/24/92	06/24/92	06/24/92	07/02/9
VOLATILE ORGANICS (ppb)	NA	NA.	NA	NA.	
METHYLENE CHLORIDE					6.8 JB
1,1,1 TRICHLOROETHANE					ND
• •					
IDENTIFIED PEAKS					1064
UNKNOWN PEAKS					743
BASE NEUTRALS (ppb)	NA	NA	NA	NA	
Capah Compounds					
BENZO(A) ANTERACENE					630 J
BENZO(A) PYRENE					560 J
BENZO(B) FLUORANTHENE					570 J
BENZO(K) FLUORANTHENE					480 J
CHRYSENE					850 J
DIBENZO(A,H) ANTHRACENE					85 J
INDENO(1,2,3-C,D)PYRENE					400 J
New & Part Composition					
NON-CaPAH COMPOUNDS					180 J
ACENAPHTHENE					80 J
ACENAPHTYLENE					
ANTHRACENE					240 J
BENZO(GHI) PERYLENE					400 J
BIS(2-ETHYLHEXYL) PHTHALATE					ND
DIBUTYL PHTHALATE					ND
FLUORANTHENE					1600 3
FLUORENE					190 J
NAPHTHALENE					74 J
PHENANTHRENE					1100 J
PYRENE					1600 3
TOUNGTETED DEAVE					5700
IDENTIFIED PEAKS UNKNOWN PEAKS					27900
ACID EXTRACTABLE COMPOUNDS (ppb)	NA	NA .	NA	NA	NA
PRIORITY METALS (ppm)	NA.	NA	NA NA	NA	NA NA
ARSENIC					
CHROMIUM					
COPPER					
LEAD					
MERCURY					
NICKEL					
ZINC					
CYANIDE					
PHENOL					
PETROLEUM HYDROCARBONS (ppm)	ND	ND	ND	ND	1680
PESTICIDES/PCBs (ppb)	NA NA	NA NA	NA NA	NA	NA
	1165	****		****	
4,4'-DDE 4,4'-DDT					

NOTES :

ppm - parts per million

ppb - parts per billion

NA - not analyzed

ND - not detected

J - compound found at less

than method detection lim

B - compound also found in la

TABLE 3 (cont.)

SAMPLE RESULTS SUMMARY

SITE C - BLOCK 408

Sample No. Area of Concern	408-16 Block 408	B408-2 Block 408	B408-3 Block 408	B408-4A Block 408	B408-6 Block 408	
Sample Depth	5.0-5.5	6.0-6.5	3.0-3.5	6.0-6.5	3.0-3.5	
Date Sampled	07/06/92	08/14/89	08/14/89	08/14/89	08/16/89	
VOLATILE ORGANICS (ppb)		NA		NA		
CHLOROFORM	ND		8	JB	6.7	
ETHYLBENZENE	ND		ND		49	
METHYLENE CHLORIDE	17 JB		ND		ND	
TETRACHLOROETHYLENE	ND		6	J	14	
1,1,1 TRICHLOROETHANE	ND .		13	J	11	
TOLUENE	ND		ND		13	,
XYLENES	ND		ND		435	
IDENTIFIED PEAKS	2520		52		17770	
UNKNOWN PEAKS	960		ND		12990	
BASE NEUTRALS (PPb)		NA	NA.	NA		
CaPAH COMPOUNDS				•		
BENZO(A) ANTHRACENE	ND				5100	
BENZO(A) PYRENE	ND				3830	
BENZO(B) FLUORANTHENE	1000 J				5780	
BENZO(K) FLUORANTHENE	ND				ND	
CHRYSENE	ND				9370	
DIBENZO(A,H) ANTHRACENE	ND				530	
INDENO(1,2,3-C,D)PYRENE	ND				1800	
NON-CaPAH COMPOUNDS						
ACENAPHTHENE	ND				1000	
ACENAPHTYLENE	ND				ND	
ANTHRACENE	ND				1800	
BENZO(GHI) PERYLENE	ND				1400	
BIS(2-ETHYLHEXYL) PHTHALATE	ND				2840	
DIBUTYL PHTHALATE	ND				ND	
FLUORANTHENE	ND				9020	
FLUORENE	ND				1800	
NAPHTHALENE	ND				1500	
PHENANTHRENE	ND				7650	
PYRENE	ND				- 11400	
IDENTIFIED PEAKS .	ND				315000	
UNKNOWN PEAKS	90000				238000	
ACID EXTRACTABLE COMPOUNDS (ppb)	NA	NA	NA	NA	ND	
PRIORITY METALS (ppm)	NA.	NA NA	NA	NA		
ARSENIC					8.6	
CHROMIUM					16	
COPPER					65.2	
LEAD					230	
MERCURY					0.8	
ZINC					226	
CYANIDE					ND	
PHENOLS					33	
PETROLEUM HYDROCARBONS (ppm)	29300	10500	6490	5130	6280	
PESTICIDES/PCBs (ppb)	NA	NA	NA	NA		
PCB-1254					200	

NOTES :

ppm - parts per million

ppb - parts per billion

ND - not detected

NA - not analyzed

J - compound found at less
than method detection limit

B - compound also found in lab. blank

TABLE 3 (cont.)

SAMPLE RESULTS SUMMARY

SITE C - BLOCK 408

Sample No.	B408-7	B408-16	B408-17	B408-18	B408-19
Area of Concern	Block 408				
Sample Depth	3.0-3.5	3.5-4.0	3.5-4.0	3.5-4.0	4.5-5.0
Date Sampled	08/16/89	07/09/92	07/09/92	07/09/92	07/10/92
VOLATILE ORGANICS (ppb)	NA	NA	NA	NA	
CHLOROFORM					ND
ETHYLBENZENE					ND
METHYLENE CHLORIDE					5.8 B
TETRACHLOROETHYLENE					ND
1,1,1 TRICHLOROETHANE					36 B
TOLUENE					ND
XYLENES					ND
IDENTIFIED PEARS					52
UNKNOWN PEAKS					43
BASE NEUTRALS (ppb)	NA	NA	NA	NA	
CaPAH COMPOUNDS					
BENZO(A) ANTHRACENE					5800 J
BENZO(A) PYRENE					1400 J
BENZO(B) FLUORANTHENE					4800 J
BENZO(K) FLUORANTHENE					4700 J
CHRYSENE					7600 J
DIBENZO(A,H) ANTHRACENE					510 J
INDENO(1,2,3-C,D)PYRENE					1900 J
NON-CAPAH COMPOUNDS					
ACENAPHTHENE					1600 J
ACENAPHTYLENE					ND
ANTHRACENE					2200 J
BENZO(GHI) PERYLENE					1700 J
BIS(2-ETHYLHEXYL) PHTHALATE					ND
DIBUTYL PHTHALATE					ND
FLUORANTHENE					17000
FLUORENE					1300 J
NAPHTHALENE					1100 J
PHENANTHRENE					15000
					14000
PYRENE					14000
IDENTIFIED PEAKS					8000
UNKNOWN PEAKS					4000
ACID EXTRACTABLE COMPOUNDS (ppb)	NA .	NA	NA	NA.	NA
PRIORITY METALS (ppm)	NA	NA	NA	NA	NA
ARSENIC				•	
CHROMIUM					
COPPER					
LEAD					
MERCURY					
ZINC					
CYANIDE					
PHENOLS					
FEEROLO					
PETROLEUM HYDROCARBONS (ppm)	9280	60	30	ND	1690
					NA NA
PESTICIDES/PCBs (ppb)	ND	NA.	NA.	NA.	NA

NOTES :

3,53

ppm - parts per million

ppb - parts per billion

ND - not detected

NA - not analyzed

J - compound found at less

than method detection limi

B - compound also found in lab

TABLE 3 (cont.)

SAMPLE RESULTS SUMMARY

SITE C - BLOCK 408

Sample No.	B408-20	B408-21	B408-22	B408-23	B408-24
Area of Concern	Block 408	Block 408	Block 408	Block 408	Block 40
Sample Depth	10.5-11.0	10.5-11.0	10.5-11.0	10.5-11.0	10.5-11.
Date Sampled	07/10/92	07/10/92	07/10/92	07/10/92	07/10/9
VOLATILE ORGANICS (ppb)	NA	NA	NA	NA	NA
CHLOROFORM					
ETHYLBENZENE					
METHYLENE CHLORIDE					
TETRACHLOROETHYLENE					
1,1,1 TRICHLOROETHANE					
TOLUENE					
XYLENES					
IDENTIFIED PEAKS					
UNKNOWN PEAKS					
BASE NEUTRALS (ppb)	NA	NA NA	NA .	NA	. NA
CaPAH COMPOUNDS					
BENZO(A) ANTHRACENE					
RENZO(A) PYRENE					
BENZO(B) FLUORANTHENE					
BENZO(K) FLUORANTHENE					
CHRYSENE					
DIBENZO(A,H) ANTHRACENE					
INDENO(1,2,3-C,D)PYRENE					
NON-Capah COMPOUNDS					
ACENAPHTHENE					
ACENAPHTYLENE					
ANTHRACENE					
BENZO(GHI) PERYLENE					
BIS(2-ETHYLHEXYL) PHTHALATE					
DIBUTYL PHTHALATE					
PLUORANTHENE					
FLUORENE					
NAPHTHALENE					
PHENANTHRENE					
PYRENE					
FIRENC					
IDENTIFIED PEAKS .					, '
UNKNOWN PEAKS	•				
ACID EXTRACTABLE COMPOUNDS (ppb)	NA	NA	NA	NA	NA.
PRIORITY METALS (ppm)	NA	NA	NA	NA	NA
ARSENIC					
CHROMIUM					
COPPER					
LEAD					
MERCURY					
ZINC					
CYANIDE					
PHENOLS				•	
PETROLEUM HYDROCARBONS (ppm)	ND	ND	26	ND	ND
PESTICINES/PCRs (nph)	NA.	NA.	NA.	NA.	NA.
PESTICIDES/PCBs (ppb) PCB-1254	MA	MA.	NA.	140	
MI M-1750					

NOTES :

ppm - parts per million

ppb - parts per billion

ND - not detected

NA - not analyzed

J - compound found at less than method detection limi

B - compound also found in lab

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HOVNANIAN TABLE 4

SAMPLE RESULTS SUMMARY SITE C - BLOCK 409

Sample No.	B409-1	B409-2	B409-3	B409-4	B409-5	B409-6	B409-8
Area of Concern	Block 409	Block-409	Block-409	Block-409	Block-409	Block-409	Block-409
Sample Depth	10.5-11.0	10.5-11.0	10.5-11.0	10.5-11.0	10.5-11.0	10.5-11.0	2.5-3.0
Date Sampled	07/10/92	07/10/92	07/10/92	07/10/92	07/10/92	07/10/92	07/10/92
VOLATILE ORGANICS (ppb)	NA	NA	NA	NA	NA	NA	
METHYLENE CHLORIDE							QN
1,1,1-TRICHLOROETHANE							2.7 JB
IDENTIFIED PEAKS							QN
UNKNOWN PEAKS					. •		QN
PETROLEUM HYDROCARBONS (ppm)	QN	QN	ND	QN	QN .	QN	37

NOTES:

ppm - parts per million

ppb - parts per billion

ND - not detected

NA - not analyzed

J - compound found at less than method detection limit

B - compound also found in lab. blank

ample No.	T-92W	T88-WIL	T88-WILl	T259AC-1	B404-2	B404-3	B404-4	404-2
rea of Concern	Block 404	Block 404	Block 404	Block 404				
Sample Depth	6.25-6.75	6.0-6.50	6.0-6.50	6.0-6.50	6.0-6.50	18.0-18.5	18.0-18.5	2.5-3.0
ate Sampled	08/14/89	08/18/89	08/18/89	08/15/89	08/17/89	08/18/89	08/18/89	06/25/92
OLATILE ORGANICS (PPb)	NA	NA	NA	NA		NA	NA	NA
CHLOROFORM			4		8.9 3	73		
TETRACHLOROETHYLENE					7.3	JB		
1,1,1-TRICHLOROETHANE					8.2	л в		
1,1,1-111111111111111111111111111111111								-
IDENTIFIED PEAKS					ND			
UNKNOWN PEAKS					ND			
OHANOWI FEBRUS								
BASE NEUTRALS (ppb)	NA	NA	NA.	NA		NA.	NA	NA
APAH COMPOUNDS								
BENZO(A) ANTHRACENE					6470			
BENZO(A) PYRENE	•				6140			
BENZO(B) FLUORANTHENE					11900			
CHRYSENE					6820			
DIBENZO(A,H) ANTHRACENE					750	J		
INDENO(1,2,3-C,D) PYRENE					2140			
The model of the state of the s								
NON-CAPAH COMPOUNDS								•
ACENAPHTHENE					460	J		
ACENAPHTHYLENE					750	J		
					1900		,	
ANTHRACENE					19100			
BIS(2-ETHYLHEXYL) PHTHALATE					1600			
BENZO(GHI) PERYLENE					770	J		
BUTYL BENZYL PHTHALATE					12600	_		
FLUORANTHENE					540	J		
FLUORENE					200	J	•	
NAPHTHALENE					8110			
PHENANTHRENS					11400			
PYRENE								
					47500			
IDENTIFIED PEAKS UNKNOWN PEAKS					5280			
UNKNOWN FEARS								
ACID EXTRACTABLE COMPOUNDS (ppb)	NA	NA	NA	NA	ИD	n a	NA	NA
		NA NA	NA NA	NA.		na na	NA NA	na na
PRIORITY METALS (ppm)	NA NA				ND 4.7		<u> </u>	
PRIORITY METALS (ppm) ARSENIC							<u> </u>	
PRIORITY METALS (ppm) ARSENIC CADMIUM					4.7		<u> </u>	
PRIORITY METALS (ppm) ARSENIC CADMIUM CHROMIUM					4.7		<u> </u>	
PRIORITY METALS (ppm) ARSENIC CADMIUM CHROMIUM COPPER					4.7 2.1 21		<u> </u>	
PRIORITY METALS (ppm) ARSENIC CADMIUM CHROMIUM COPPER LEAD					4.7 2.1 21 58.4		<u> </u>	
PRIORITY METALS (ppm) ARSENIC CADMIUM CHROMIUM COPPER LEAD MERCURY					4.7 2.1 21 58.4 273 1.17		<u> </u>	
PRIORITY METALS (ppm) ARSENIC CADMIUM CHROMIUM COPPER LEAD MERCURY NICKEL					4.7 2.1 21 58.4 273 1.17 59		<u> </u>	
PRIORITY METALS (ppm) ARSENIC CADMIUM CHROMIUM COPPER LEAD MERCURY NICKEL SILVER					4.7 2.1 21 58.4 273 1.17 59 3.0		<u> </u>	
PRIORITY METALS (ppm) ARSENIC CADMIUM CHROMIUM COPPER LEAD MERCURY NICKEL					4.7 2.1 21 58.4 273 1.17 59		<u> </u>	
PRIORITY METALS (ppm) ARSENIC CADMIUM CHROMIUM COPPER LEAD MERCURY NICKEL SILVER ZINC					4.7 2.1 21 58.4 273 1.17 59 3.0		<u> </u>	
PRIORITY METALS (ppm) ARSENIC CADMIUM CHROMIUM COPPER LEAD MERCURY NICKEL SILVER ZINC CYANIDE					4.7 2.1 21 58.4 273 1.17 59 3.0 332		<u> </u>	
PRIORITY METALS (ppm) ARSENIC CADMIUM CHROMIUM COPPER LEAD MERCURY NICKEL SILVER ZINC					4.7 2.1 21 58.4 273 1.17 59 3.0 332		<u> </u>	
PRIORITY METALS (ppm) ARSENIC CADMIUM CHROMIUM COPPER LEAD MERCURY NICKEL SILVER ZINC CYANIDE					4.7 2.1 21 58.4 273 1.17 59 3.0 332		<u> </u>	
PRIORITY METALS (ppm) ARSENIC CADMIUM CHROMIUM COPPER LEAD MERCURY NICKEL SILVER ZINC CYANIDE PHENOLS PETROLEUM HYDROCARBONS (ppm)	NA ND	NA NA	NA	NA NA	4.7 2.1 21 58.4 273 1.17 59 3.0 332 2.0 ND	NA	NA.	NA.
PRIORITY METALS (ppm) ARSENIC CADMIUM CHROMIUM COPPER LEAD MERCURY NICKEL SILVER ZINC CYANIDE PHENOLS PETROLEUM HYDROCARBONS (ppm) PESTICIDES/PCBs (ppb)	NA NA	NA NA	NA 85	NA A2	4.7 2.1 21 58.4 273 1.17 59 3.0 332 2.0 ND	NA ND	NA	NA 315
PRIORITY METALS (ppm) ARSENIC CADMIUM CHROMIUM COPPER LEAD MERCURY NICKEL SILVER ZINC CYANIDE PHENOLS PETROLEUM HYDROCARBONS (ppm)	NA ND	NA NA	NA 85	NA A2	4.7 2.1 21 58.4 273 1.17 59 3.0 332 2.0 ND	NA ND	NA	NA 315

NOTES :

ppm - parts per million

ppb - parts per billion

ND - not detected

NA - not analyzed

J - compound found at less

than method detection limit

B - compound also found in lab. blank

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TABLE 6

SAMPLE RESULTS SUMMARY

SITE E - BLOCK 405

Sample No.	405-1	405-2	405-3	405-4	B405-1	
Area of Concern	Block 405	Block 405	Block 405	Block 405	Block 40	5
Sample Depth	2.5-3.0	2.5-3.0	2.5-3.0	2.5-3.0	15.5-16.	0
Date Sampled	06/23/92	06/23/92	06/23/92	06/23/92	08/18/89	9
VOLATILE ORGANICS (ppb)	NA	NA	NA	NA		
CHLOROFORM					8.9	JE
1,1,1-TRICHLOROETHANE					6.4	JE
IDENTIFIED PEAKS					ND	
UNKNOWN PEAKS					ND	
BASE NEUTRALS (ppb)	NA	NA	NA			
CaPAH COMPOUNDS						
BENZO(A) ANTHRACENE					85	J
BENZO(A) PYRENE					93	J
BENZO(B) FLUORANTHENE					160	J
CHRYSENE				200 J	96	J
DIBENZO(A,H) ANTHRACENE			•		20	J
INDENO(1,2,3-C,D) PYRENE					63	J
NON-Capah compounds						
ACENAPHTHYLENE					10	J
ANTHRACENE					20	J
BENZO(GHI) PERYLENE					55	J
BIS(2-ETHYLHEXYL) PHTHALATE					1800	J
FLUORANTHENE				390 J	190	J
FLUORENE		۸.		6300 J	ND	
NAPHTHALENE				3800 J	ND	
PHENANTHRENE				9500	110	J
PYRENE				1300 Ј	150	j
IDENTIFIED PEAKS				1039000	ND	
UNKNOWN PEAKS				176000	ND	
ACID EXTRACTABLE COMPOUNDS (ppb)	NA	NA	NA	NA	ND	
PRIORITY METALS (ppm)	NA	NA	NA	NA		
CHROMIUM					28.9	
COPPER					14	
LEAD					39	
NICKEL					22	
ZINC					49.5	
CYANIDE					ND	
PHENOLS					ND	
PETROLEUM HYDROCARBONS (ppm)	ND	ND	ND	4220	NA	
PESTICIDES/PCBs (ppb)	NA	NA	NA	NA	ND	

NOTES :

ppm - parts per million

ppb - parts per billion

ND - not detected

NA - not analyzed

J - compound found at less
 than method detection limit

TABLE 7

SAMPLE RESULTS SUMMARY SITE E - BLOCK 406

ON of comes	T143-1	T206N	B406-1	B406-2	B406-3	B406-4	B406-5	B406-6	B406-7	B406-8	B406-9
Area of Concern	Block 406	Block-406									
Sample Depth	6.0-6.5	6.5-7.0	5.5-6.0	10.0-10.5	6.0-6.5	10.5-11.0	9.0-9.5	7.0-7.5	5.5-6.0	10.0-10.5	10.5-11.0
Date Sampled	08/12/89	08/11/89	26/60/10	07/09/92	07/09/92	07/09/92	07/09/92	07/09/92	07/09/92	07/09/92	07/10/92
PRIORITY METALS (ppm)	NA	NA	AN	NA	NA	NA	N.		NA	N.	
ARSENIC								2.4			QN
CHROMIUM								26.7			13.4
COPPER								58.3			22
LEAD	•							209			QN
MERCURY								1.40			ΩN
NICKEL								25			14
SELENIUM								0.78	•		QN
ZINC								134			32.4
PETROLEUM HYDROCARBONS (ppm)	QN	ND	QN	210	25	ND	ND	54	ΩN	UN	ΩN

NOTES :

ppm - parts per million

ppb - parts per billion

ND - not detected

NA - not analyzed

HOVNANIAN TABLE 8

SAMPLE RESULTS SUMMARY SITE E - BLOCK 407

Sample No.	407-1	407-2	407-4	407-5	407-6	40/-/	407-8
Area of Concern	Block 407	Block-407	Block-407	Block-407	Block-407	Block-407	Block-407
Sample Depth	3.5-4.0	3.5-4.0	8.0-8.5	5.0-5.5	5.0-5.5	5.0-5.5	5.0-5.5
Date Sampled	07/02/92	07/02/92	07/03/92	07/03/92	07/03/92	07/03/92	07/03/92
VOLATILE ORGANICS (ppb)			NA	NA	NA.	NA	NA
METHYLENE CHLORIDE	2.6 JB	1.9 JB			-		
BASE NEUTRALS (ppb)			NA	NA	NA	NA	NA
Capah Compounds							
BENZO(A) ANTHRACENE	12 J	QN					
BENZO(A) PYRENE	12 J	6.6 J					
BENZO(B) FLUORANTHENE	23 J	14 J					
CHRYSENE	14 J	9.8 J			·	•	
NON-Capah Compounds							
FLUORANTHENE	22 J	14 J					
PHENANTHRENE	ΩN	8.5 J					
PYRENE	21 J	13 J					
IDENTIFIED PEAKS	QN	QN					
UNKNOWN PEAKS	1330	QN					
ACID EXTRACTABLE COMPOUNDS (ppb)	ND	ND	NA	NA	NA	NA	NA
PRIORITY METALS (ppm)			NA	NA	NA	NA	NA
ARSENIC	1.1	1.2					-
CHROMIUM	8.8	6.3					
COPPER	35.9	30.4					
LEAD	40	8.5					
NICKEL	8.7	6.5					
ZINC	50.9	31.2					
CXANIDE	QN	QN	NA	NA	NA	NA	NA
STONAHA	2	QN	NA	NA	NA	NA	NA
FIENOLS							
PETROLEUM HYDROCARBONS (ppm)	NA	NA	ND	ON	130	28	180
PESTICIDES/PCBs (ppb)	QN	QN	NA	NA	NA	NA	NA

J - compound found at less than method detection limitB - compound also found in lab. blank

ND - not detected J - NA - not analyzed B -

KH0V005909

NOTES:
ppm - parts per million
ppb - parts per billion

APPENDIX A

TEST PIT AND BORING LOGS

SHEET _ 1 OF _ 1

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10B NO.		CLIENT					PROJECT			1
89102		Ho	V				SITE-1	\subset		
LOCATION							ELEVATION AND DAT	UM		
. NEWARK	N.J									ļ
DRILLING CONTRACTO			DRILLER			SAMP	PLER	INSPE	CTOR	
J.M. SCREE			S. 6	5×2<	30	ľ	KAISER	l .	KAISER	-
	TNC				E OF BIT		DATE STARTED		DATE COMPL	
DRILLING RIG TYPE			ı							
Since 28	60	 -	4 00	DIS	AL BIT	·	8.14,89		8:14.	
SAMPLER TYPE .			HAMMER WEIGHT		DROP		TOTAL DEPTH		WATER ENCOUNTERED	
STAINLESS ST	LEEL HUM	> AUGER					6.75			
BORING/	SAMPL	ES	OCDTU	WATER						
CONSTRUCTION	NO. RECOVE	I DI OWS/E- I	DEPTH FT.	\{	DE	SCRIP	TION OF SOILS		REMAR	KS
	FT.	1500,7376		>			····			
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BORING NO. 8408-1 SHEET 1 OF 1

JOB NO.			CLIENT					PROJECT	_		}
89102			Ho	V				SITE-	\mathbb{C}_{-}		1
LOCATION								ELEVATION AND DAT	UM		
MEWARK	, N.	7.									1
DRILLING CONTRACTO				DRILLER			SAMP	LER	INSPE	CTOR	
JM SCRGE				S.60	545	5C		KAISER	1	KAISER	
DRILLING RIG TYPE	THE	•				E OF BIT		DATE STARTED		DATE COMPL	
Since 28	<u>60</u>	 .		HAMMER		DROP		8.14.88		S.I.C.	
SAMPLER TYPE			_	WEIGHT		- UROF		TOTAL DEPTH		ENCOUNTERED	
STAINLESS ST	EEL 1	TAND	PUCER					ଓ .ਤ '			and the same
BORING/	S	AMPLES	·	DEDTU	WATER						1
CONSTRUCTION	NO.	RECOVERY	BLOWS/6"	DEPTH FT.	¥	DE	SCRIP'	TION OF SOILS		REMARI	(S
	110.	FT.	BLUW 37 6		^			·			
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BORING NO. 8405-2 SHEET 1 OF 1

										
JOB NO.			CLIENT					PROJECT	_	
89102			Ho	V				SITE-	\subset	
LOCATION					,			ELEVATION AND DA	TUM	
. MEWARK	. N.	7					į			
DRILLING CONTRACT	OR	-		DRILLER			SAME	PLER	INSPE	CTOR
J. M. SCREE	TNC	_		5.6	544 C	55C	B.	KAISER	B	KAISER
DRILLING RIG TYPE						PE OF BIT		DATE STARTED		DATE COMPLETED
Since 28	500					LAG BIT		8-14,89		
SAMPLER TYPE	300			HAMMER		DROP		TOTAL DEPTH		タ・レンラ WATER EVE!
		10.15	^	WEIGHT		- "		_		ENCOUNTERED STABILIZED
STAINLESS S				1				6.5		
BORING/		AMPLES		DEPTH	WATER	. 55		TION OF CON C		
CONSTRUCTION	NO.	RECOVERY FT.	BLOWS/6	FT.	ΑÀ	DE	SCRIP	TION OF SOILS		REMARKS
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BORING NO. BACR-3

JOB NO.			CLIENT					PROJECT			
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LOCATION								ELEVATION AND D			
. NEWARK	N.	<u>J.</u>		<u> </u>			i				
DRILLING CONTRACT				DRILLER			SAME	LER	INSPE	CTOR	
J.M SCREE	Inc	-		5.60	54	5c	₿.	KAISER	i i	. KAISER	
DRILLING RIG TYPE				SIZE AND	TYI	PE OF BIT		DATE STARTED		DATE COMP	
Sirke 28	(66					LAG BIT		8.14.80		8-14-9	
SAMPLER TYPE	,			HAMMER		DROP		TOTAL DEPTH		WATER	
STAINLESS ST	ree. s	JANA	D UGED	WEIGHT		-		6.51		ENCOUNTERED	STABILIZED
314446233 3		AMPLES		1	m			9,3			
BORING/		RECOVERY		DEPTH	WATER	ne.	SCRIP.	TION OF SOILS		DEMÁD	ν c
CONSTRUCTION	NO.	FT.	BLOWS/6.	FT.	```	,	30.111	700 05 30123		REMAR	K 5
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BORING NO. BAGE-4 SHEET 1 OF 1

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JOB NO.			CLIENT						~		1
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LOCATION		 -						ELEVATION AND DAT	UM		
NEWARK	, N.)		1							
DRILLING CONTRACTO				DRILLER			SAMP		1	CTOR	
J.M. SCREE	INC	-		5.60			<u>B</u> ,	KAISER	B	KAISER	
DRILLING RIG TYPE				SIZE AND	TYP	E OF BIT		DATE STARTED		DATE COMPL	ETED
Since 28	00			4"00	DR	AL BIT		8-14-89		8.14.	કુજ
SAMPLER TYPE				HAMMER	-	DR-OP		TOTAL DEPTH		WATER ENCOUNTERED	LEVEL
STAINLESS ST	EEL 1	AMD	AUGER	WEIGHT		·		6.5		ENCOUNTERED	3128161268
		AMPLES			œ						
BORING/ CONSTRUCTION		RECOVERY		DEPTH	ATER	DE	SCRIP	TION OF SOILS		REMAR	ks
CONSTRUCTION	NO.	FT.	BLOWS/6.	FT.	≯						
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DRILLING CONTRACTO		-		DRILLER			SAME	PLER	INSPE	CTOR
J.M. SCREE		_		S.60	543	5C		KAISER		.KAISER
DRILLING RIG TYPE						E OF BIT		DATE STARTED		DATE COMPLETED
Since 28	(00			4" 65	DIS	LAG BIT		8.15.89		- ই । তে, প্রব
SAMPLER TYPE				HAMMER		DROP		TOTAL DEPTH		WATER LEVE!
STAINLESS S	reel i	AAND	AUGER	WEIGHT		-		8.5		ENCOUNTERED STABILIZED
		AMPLES		1	œ			3 7		
BORING/ CONSTRUCTION	NO.	RECOVERY		DEPTH FT	WATER	, DE	SCRIP	TION OF SOILS		REMARKS
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JOB NO.			CLIENT					PROJECT			
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LOCATION				· · · · · ·				ELEVATION AND DAT			
. NEWARK	N.7	_									
DRILLING CONTRACTO				DRILLER			SAME	OLER.	INSPE	CTOR	
J.M SCREE				S. 60	عصد			KAISER		KAISER	
	TNC	•				E OF BIT	7	DATE STARTED		DATE COMPL	
DRILLING RIG TYPE				1						1	
Since 28	00					LAG BIT		8.16.59		8.16	39
SAMPLER TYPE				HAMMER WEIGHT		DROP		TOTAL DEPTH		WATER ENCOUNTERED	STABILIZED
STAINLESS ST	EEL 1	IAND	AUGER					3.5'			
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BORING/ CONSTRUCTION	NO.	RECOVERY	DI OVECTO	DEPTH FT.	WATER	DE	SCRIP	TION OF SOILS		REMAR	KS
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LOCATION	A1 -							ELEVATION AND DAT	UM		
NEWARK) <u> </u>		DRILLER	· ·				==·		
DRILLING CONTRACTO				l .			SAMP		1	CTOR	
J.M. SCREE	TNC	-		5.6			<u> </u>	KAISER	18	KAISER	
DRILLING RIG TYPE	_					PE OF BIT		DATE STARTED		DATE COMPL	
Since 28	00			4 00	DIS	LAG BIT		8.16.59		3.18.5	
SAMPLER TYPE				HAMMER WEIGHT		DROP		TOTAL DEPTH		WATER ENCOUNTERED	
STAINLESS ST	EEL I	HAND	AUGER					8.51		8.0'	F.C
BORING/		AMPLES		DEPTH	ER					7	T
CONSTRUCTION	NO.	RECOVERY	BLOWS/6	FT.	WATER	DE	SCRIP	TION OF SOILS		REMAR	ĸs
		FT.					· · · · · · · · · · · · · · · · · · ·				
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JOB NO.			CLIENT					PROJECT			
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LOCATION								ELEVATION AND DAT			
. NEWARK	. N.	<u>. </u>									
DRILLING CONTRACTO				DRILLER		,	SAME	PLER	INSPE	CTOR	
J.M SCREE	INC	-		5.60			$ \mathcal{B} $	KAISER	B.	KAISER	_
DRILLING RIG TYPE						PE OF BIT		DATE STARTED		DATE COMPI	
Since 28				4"00	DR	LAG BIT		8:16:59		3-16	, 5 9
SAMPLER TYPE	<u></u>			HAMMER		DROP		TOTAL DEPTH		WATER	LEVEL
STAINLESS ST	TEE_ 1	HAND	AUGER	WEIGHT		-		6,C'		ENCOUNTERED	STABILIZEO
	1	SAMPLES			<u>~</u>			<u> </u>			
BORING/ CONSTRUCTION		RECOVERY		DEPTH FT.	/ATER	DE	SCRIP	TION OF SOILS		REMAR	κs
	NO.	FT.	BLOWS/6"	· · ·	*						
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89102 LOCATION	· · · · · · · · · · · · · · · · · · ·	Ho	V				SITE-	<u> </u>	
. NEWARK	N.	<u>J.</u>					ELEVATION AND DA	TUM	
DRILLING CONTRACTO	OR .		DRILLER			SAME	PLER	INSP	ECTOR
J.M. SCREE	INC	-	5.60			\mathcal{B}_{i}	KAISER	B	KAISER
DRILLING RIG TYPE					E OF BIT		DATE STARTED		DATE COMPLETED
Since 28	00		4"00	DR	AL BIT		8.16.999		8-16.8-3
SAMPLER TYPE			HAMMER WEIGHT		DROP		TOTAL DEPTH		WATER LEVEL ENCOUNTERED STABILIZED
STAINLESS ST							¥.5'		3.0' S.0'
BORING/		SAMPLES	DEPTH	WATER					♥ ▼
CONSTRUCTION	NO.	FT. BLOWS/6	FT.	WA	DES	CRIP	TION OF SOILS		REMARKS
					CONCR	ETE			
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MEWARK	, N.	<u>J.</u>									
DRILLING CONTRACTO				DRILLER			SAME	PLER	INSPE	CTOR	
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DRILLING RIG TYPE						E OF BIT		DATE STARTED	٠	DATE COMPL	
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SAMPLER TYPE		.		HAMMER	1316	DROP		TOTAL DEPTH		WATER	
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STAINLESS ST	STEEL HAND AUGER				- 1		·	3,3			
BORING/		AMPLES		DEPTH	WATER	D.C.	CC010	TION OF COU.S			
CONSTRUCTION	NO.	RECOVERY	BLOWS/6-	FT.	×		SCRIP	TION OF SOILS		REMAR	KS
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BORING NO. 8405-10 SHEET_1 OF 1

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1			CLIENT					PROJECT	~		
89102			Ho	<u> </u>				SITE - (
LOCATION								ELEVATION AND DAT	UM		
. MEWARK	, N.	7		·							
DRILLING CONTRACTO	OR .			DRILLER			SAMP	PLER	INSPE	CTOR	
J.M SURGE	INC			S.60	546	5C	\mathcal{B}^{\cdot}	KAISER	B.	KAISER	
DRILLING RIG TYPE				SIZE AND	TYP	E OF BIT		DATE STARTED		DATE COMPLETED	
Since 28	0.0			4"00	De	AL BIT	1	8-17.59		8017089	
SAMPLER TYPE				HAMMER DROP				TOTAL DEPTH		WATER LEVEL	
STAINLESS ST	F	007.80	WEIGHT				3.5	ŀ	ENCOUNTERED STABILIZED		
STAINLESS S				~ 1			. JJ				
BORING/	. S		DEPTH	WATER	חר	DESCRIPTION OF SOILS			25,440,46		
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SHEET 1 OF 1

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LOCATION								ELEVATION AND DAT			
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DRILLING CONTRACTO		·		DRILLER			SAMP	LER	INSPE	CTOR	
J.M. SORGE				5.60	544	30		KAISER	l	.KAISER	
DRILLING RIG TYPE	<u> </u>	•				E OF BIT		DATE STARTED		DATE COMPL	
l				1		LAC BIT		8.18.84		1	
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STAINLESS ST		10.15	WEIGHT				6.5		ENCOUNTERED	STABILIZED	
STAINLESS S		AMPLES			~			6,0			
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10B NO. 89102			CLIENT Ho	ν				PROJECT SITE -			
LOCATION								ELEVATION AND DAT			
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DRILLING CONTRACTO				DRILLER			SAMP			CTOR	
J.M. SCREE	INC	<u> </u>		S. 6x				KAISER	B	KAISER	-
DRILLING RIG TYPE				1		E OF BIT		DATE STARTED		DATE COMPL	ETED
Since 28	00			4"00	DIS	AL BIT		8,18,39		3.13.	
SAMPLER TYPE				HAMMER WEIGHT	-	DROP		TOTAL DEPTH		WATER ENCOUNTERED	LEVEL
STAINLESS S								6.5			
BORING/ CONSTRUCTION		AMPLES RECOVERY		DEPTH FT.	WATER	DE	SCRIP	TION OF SOILS		REMARI	KS
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LOCATION	·····			•				ELEVATION AND DAT	UM		
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DRILLING CONTRACTO				DRILLER			SAMI	PLER	INSPE	CTOR	
JM Scirce		٠		1 S. d	, (21/21/2	52°C	1	3.Koiser		KAISER	
DRILLING RIG TYPE				SIZE AND	TYI	PE OF BIT	·	DATE STARTED	1 73	DATE COMPL	ETED
Sime	ナダーブ			1		DRAG BI	·~	8.15.89	:	8-15.	
SAMPLER TYPE				HAMMER	<u>ں ر</u>	DROP		TOTAL DEPTH		WATER	LEVE
STAINLESS ST	ee, M	シェアカ	LUCER	WEIGHT				6.5	!	ENCOUNTERED	STABILIZED
		AMPLES		α							
BORING/ CONSTRUCTION		RECOVERY		DEPTH	WATER	0E	SCRIP	TION OF SOILS		REMAR	KS .
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JOB NO.			CLIENT					PROJECT		
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DRILLING CONTRACT				DRILLER			SAME	OI ED	INCOR	CTOR
JM ScizGE		_		186		255C	1 .			•
	<u> </u>		-	SIZE AND	TV	PE OF BIT		DATE STARTED	<u> </u>	KAISER
DRILLING RIG TYPE	\			1						DATE COMPLETED
Simes	720C)				DRAG BI	7	8.15.59		8.12.26
SAMPLER TYPE		_		HAMMER WEIGHT		DROP		TOTAL DEPTH		WATER LEVEL
STAINLESS ST					·			6.5	_	
BORING/		SAMPLES		DEDTU	ER					
CONSTRUCTION	NO.	RECOVERY	BLOWS/6-	DEPTH FT.	WATER	, DE	SCRIP	TION OF SOILS		REMARKS
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JM SCRGE	IN	<u> </u>		5.0	31515	522	1	3.Koiser	\mathcal{E}'_{-}	KAISER	
DRILLING RIG TYPE				SIZE AND	J TYP	E OF BIT		DATE STARTED		DATE COMPL	ETED.
Simus 3	7200)		1 4 " c	G	DRAG BI	7	8017.58		80.17.5	59
SAMPLER TYPE				HAMMER DROP				TOTAL DEPTH		WATER	LEVE
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	SAMPLES										
BORING/ CONSTRUCTION	BORING/					DE	SCRIP	TION OF SOILS		REMARI	<s< td=""></s<>
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DRILLING CONTRACTO				DRILLER			SAME		INSPE	CTOR	
JM Scirce	エル	<u> </u>		S. 0	21515	<i>522</i>	F	3. Koiser	\mathcal{E}'	KAISER	
DRILLING RIG TYPE				SIZE AND) TYP	'E OF BIT		DATE STARTED		DATE COMPL	ETED
Simus	7.800	·		٨ '' و	c	DRAG BI	7	8.17.89		8-17.8	39
SAMPLER TYPE				HAMMER WEIGHT		DROP		TOTAL DEPTH		WATER	I EVE
STAINLESS ST	EEL H	AND A	NUCER	WEIGHT				8.5		ENCOUNTERED	STABILIZED
BORING/	9	AMPLES			ER						
CONSTRUCTION	NO.	RECOVERY	BLOWS/6	DEPTH FT	WATER	DE	SCRIP	TION OF SOILS		REMARI	<s td="" <=""></s>
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JOB NO.			CLIENT					PROJECT			
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LOCATION								ELEVATION AND DAT	UM		
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DRILLING CONTRACTO				DRILLER			SAME	PLER	INSPE	CTOR	
JM ScizGE		c		1 5.0	21.51J	522	F	3. Koiser	ŀ	KAISER	
DRILLING RIG TYPE				SIZE AND	TY	PE OF BIT	·	DATE STARTED		DATE COMPL	
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SAMPLER TYPE	- :			HAMMER		DROP		TOTAL DEPTH		S・iつ is WATER	
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STAINLESS ST		AMPLES		1	~			٤.٥			
BORING/	3	RECOVERY		DEPTH	WATER	ne	SCRIP	TION OF SOILS		DEMARK	, c
CONSTRUCTION	NO.	FT.	BLOWS/6"	FT.	×	,	JUINT	110N OF 301E3		REMARI	()
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BORING NO. TI34VL SHEET 1 OF 1

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LOCATION								ELEVATION AND DAT	UM		
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DRILLING CONTRACTO	DR [']			DRILLER			SAME	PLER	INSPE	CTOR	
JM Scirce	IN	C	_	5.6	3151J	520	7	3. Koiser	B.	KAISER	
DRILLING RIG TYPE				SIZE AND	TYF	PE OF BIT		DATE STARTED		DATE COMPL	ETED.
Simus	7200			A" e	. G	DRAG B	7	5.17.89		5.17.	53
SAMPLER TYPE				HAMMER DROP WEIGHT			TOTAL DEPTH			WATER	LEVEL
STAINLESS ST	PAINLESS STEEL HAND AUCER							6.0		ENCOUNTERED	STABILIZED
	SAMPLES						-				
BORING/ CONSTRUCTION	710	RECOVERY		DEPTH FT.	WATER	DE	SCRIP	TION OF SOILS		REMAR	κs
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BORING NO. 34-4-2 SHEET 1 OF ____

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JOB NO.			CLIENT					PROJECT			
89101			Ho	7		·		SITE - E			
LOCATION								ELEVATION AND DAT	UM		
NEWARK	N	\mathcal{J} .									
DRILLING CONTRACT				DRILLER			SAME	PLER	INSPE	CTOR	
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DRILLING RIG TYPE				SIZE AND	TYI C	PE OF BIT		DATE STARTED		DATE COMPL	ETED
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SAMPLER TYPE	- 300			4" CD DRAG BIT HAMMER DROP				TOTAL DEPTH		WATER	
ł	1.6	•		WEIGHT				1		ENCOUNTERED	STABILIZED
STAINLESS ST	1		1		T ~ 1	<u> </u>		6,5			
BORING/					TEF	. 05	CCDID	TION OF SOILS			
CONSTRUCTION	NO.	BLOWS/6	DEPTH A DESCRI				TION OF SOILS	,	REMAR	KS	
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BORING NO. 84-4-3 SHEET 1 OF 1

JOB NO.			CLIENT					PROJECT			
89101			Ho	νν				SITE - E			
LOCATION	,							ELEVATION AND DAT	UM		······································
NEWARK	Ni.	.T.									
DRILLING CONTRACTOR				DRILLER			1	PLER INSPECTOR			
JM SCIRGE.	INC			5.6	3151	<i>58</i> 2	<u> </u>	S.KOISER	ET.	KAISER	
DRILLING RIG TYPE				SIZE AND	TYF	PE OF BIT		DATE STARTED		DATE COMPL	ETED.
	300			4" CD DRAG BIT			7	3.14,89	8-18-89		
SAMPLER TYPE				HAMMER DROP WEIGHT				TOTAL DEPTH		WATER ENCOUNTERED	LEVE!
STAINLESS STEE			مدور					18.5		17.0'	17.0
BORING/	BORING/ SAMPLES			DES ATER DES					A	4	
CONCERNICATION	NO.	RECOVERY	BLOWS/6	FT.	ΨĀ	DE	SCRIP.	TION OF SOILS		REMARI	<s td="" <=""></s>
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BORING NO. BOLL -4
SHEET ____ OF ____

JOB NO.	· ·							<u></u>			
3			CLIENT				•	PROJECT			
89101			Ho	<u> </u>				SITE - E			
LOCATION								ELEVATION AND DAT	UM		
NEWARK		\mathcal{I} .	 	DRILLER							
DRILLING CONTRACT							ı	PLER INSPECTOR			
JM Scirce		<u>c</u>		2.0	(3/5/V	582	1.5	3. Koiser B.K		KAISER	
DRILLING RIG TYPE				SIZE AND	ואו נ	PE OF BIT		DATE STARTED		DATE COMP	ETED .
Simo	<u> 7200</u>) 		4" CD DRAG BIT			7	3.18.89	1	5.19.99	
SAMPLER TYPE				HAMMER	_	DROP	_	TOTAL DEPTH		WATER	LEVE
STAINLESS ST	EEL H	AND P	LUCER	WEIGHT				13.2,		ENCOUNTERED	STABILIZED
BORING/	9	SAMPLES			2						
CONSTRUCTION	NO.	RECOVERY	BLOWS/6	DEPTH FT.	WATER	DE	SCRIP	TION OF SOILS		REMAR	KS
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BORING NO. 8405-1

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39101			CLIENT				PROJECT			
LOCATION			Ho	Υ				SITE - E		
NEWARK	Λi	τ						ELEVATION AND DAT	UM	
DRILLING CONTRACTO		· <u></u>		DRILLER			SAMF	PLER INSPECTOR		CTOP
JM ScizGE		_		S. 6	~! ひ ! へ	44 m		S.Kaiser		
DRILLING RIG TYPE	<u>, ,LIM</u>			SIZE AND	TY	PE OF BIT		DATE STARTED	0	DATE COMPLETED
Simo	1800			1			·~	8-18-59		:
SAMPLER TYPE				4" CD DRAG BIT				TOTAL DEPTH	S.15.59 WATER LEVEL	
STAINLESS ST	eel H	and A	UGER	WEIGHT			_	16.0	ENCOUNTERED STABILIZED	
	1	AMPLES			2					
BORING/ CONSTRUCTION	NO.	RECOVERY	BLOWS/6	DEPTH FT.	WATER	DE	SCRIP	TION OF SOILS		REMARKS
	110.	FT.	8C0M278		· 5					
-						CONCICE	<u> </u>	1" STONE		
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	8405-1			-						
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BORING NO.: B409-1 LOCATIO						TIOI	ION: Bl. 409			
JOB NUMBER							T: K. HOVNANIAN			
DRILLING C	ONTRAC	CTOR:	MILLTOWN E	RILLIN	VIG A	DNA	EXCAVATION			
DRILLING M				ER			DRILLER: A. UNTAMO			
BIT SIZE/T	YPE: 4'	DRAG				·	SAMPLER: A. HEFFRON			
SAMPLER TY	PE:						INSPECTOR: A. HEFFRON			
HAMMER WE	IGHT:			DR	RILL	ING	B DATES ELEVATION: -			
STROKE LE	NGTH:		ST	ART: 7/	/10/	92	FINISH: SAME TOTAL DEPTH: 11			
PROFILE	NUMBER	SAMPL REC.	ES BLOWS/8 IN	DEPT	Н	WATER	STRATIGRAPHY			
0000				-2		-	Brown silty loam with construction debris.			
						-	Dark brown/black clayey silt with pebbles.			
				-8 -10		-Ψ	Red/brown clayey silt with shale fragments. Water at 10 ft.			
	B409-1			12		-				
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				48		-				
				-		-				
بن مين مين مين مين				20			End of Boring			
				-22		-				
				-24		-				
				-26		-				
				-28		_				
				30		-	KHOV005935			



						1. 40 / 0. //			
BORING NO.	: B409-	-2		LOC	DCATION: Bl. 409				
JOB NUMBE			_	PRO	JECT	T: K. HOVNANIAN			
DRILLING C	ONTRAC	CTOR:	MILLTOWN E	RILLING	ANE	D EXCAVATION			
DRILLING M				ER		DRILLER: A. UNTAMO			
BIT SIZE/T		'DRAG)			SAMPLER: A. HEFFRON			
SAMPLER T	YPE:					INSPECTOR: A. HEFFRON			
HAMMER WE				DRIL	LIN	G DATES ELEVATION:			
STROKE LE	NGTH:		ST	ART: 7/10	1/92	2 FINISH: SAME TOTAL DEPTH: 11			
PROFILE	NUMBER	SAMPL REC.	ES BLOWS/6 IN	DEPTH	WATER	STRATIGRAPHY			
					I	Red/brown loam with pebbles.			
				 - 2 -	-	Grey/tan clay.			
				 4 -	-	Slightly clayey red/brown silt with minor coarse sand and fine			
			·	-6 -	-	gravel.			
				-8					
	2400			10					
	B409-2			12		End of Boring			
				14					
				1 6	-				
				- 18					
				-20	-				
				-22					
				-24	-				
				-26	-				
				-28	_				
				-30	<u> </u>	KH0V005936			



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BORING NO.						N: BI. 409 : K. HOVNANIAN
JOB NUMBER			MILL TOWN D			EXCAVATION
DRILLING M					MIND	DRILLER: A. UNTAMO
BIT SIZE/T				<u>ien</u>		SAMPLER: A. HEFFRON
SAMPLER TY		DNAC				INSPECTOR: A. HEFFRON
HAMMER WE				DRTLI	TNIC	DATES ELEVATION:
STROKE LEI			ST	ART: 7/10		FINISH: SAME TOTAL DEPTH: 11
STROKE EE				1111.1710		THIOTH CAPIE TOTAL DELTH. II
PROFILE	ROFILE NUMBER REC. BLOWS/6 IN				WATER	STRATIGRAPHY
NOVOV						Grey/black loam with
00,000				1		
10000		i	-2		construction debris.	
100 100 h				+		
N. 00 N. 00 N.				-4	-	
7. 7.				†	\vdash	
				-6	-	Grey/tan-clay.
				-	}	
				 8	-	Red/brown clayey silt with shale
		•		-	- 1	fragments.
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	B409-3			1.		
	5408-3			12	L	End of Boring
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BORING NO.: B409-4 LOCATION: Bl. 409										
JOB NUMBER					K. HOVNANIAN					
				AND	EXCAVATION					
	ETHOD: SOLI		ER		DRILLER: A. UN					
BIT SIZE/T	YPE: 4" DRAG)			SAMPLER: A. HE					
SAMPLER TY	YPE:				INSPECTOR: A.					
HAMMER WE	IGHT:		DRILL	ING	DATES	ELEVATION:				
STROKE LE	NGTH:	ST	ART: 7/10,	/92	FINISH: SAME	TOTAL DEPTH: 11				
PROFILE	SAMPL NUMBER REC.		DEPTH	MATER	STR	ATIGRAPHY				
Ay Ay Ay Ay Ay					Red/brown silt	y loam with minor				
4 4 4 4		1			shale fragmen					
4,			-2	ΓΙ	strate tragment					
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			-6	- 1						
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	B409-4		-	 						
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BORING NO.	: B409-	·5			LOCATION: Bl. 409					
JOB NUMBER							K. HOVNANIAN			
I					NG AN	ID E	D EXCAVATION			
DRILLING M				ER			DRILLER: A. UNTAMO			
BIT SIZE/T	YPE: 4"	DRAG	i				SAMPLER: A. HEF			
SAMPLER TY	YPE:			·			INSPECTOR: A. H			
HAMMER WE							DATES	ELEVATION:		
STROKE LE	NGTH:		ST	<u> ART: 7</u>	/10/9	2 [FINISH: SAME	TOTAL DEPTH: 11		
PROFILE	SAMPLES NUMBER REC. BLOWS/8 IN			DEP.	TH		STRATIGRAPHY			
ال الله الله الله الله الله الله الله ا				-2	-		Red-brown loam	n with gravel.		
				4	-		Grey/black clay gravel.	ey silt with some		
				6			Tan/black fine damp. Some gra			
					-		Red/brown clay	ey, sandy silt.		
	B409-5			12			End of Boring			
				14	-		;			
				16	+					
				-18						
				20	-					
				-22	-					
				24						
				26						
				28						
				30	-			KHOV005939		



	_					
BORING NO.						N: Bl. 409
JOB NUMBER	R: 9205	0 -		PROJ	ECT	: K. HOVNANIAN
DRILLING C	ONTRAC	CTOR:	MILLTOWN D	RILLING	ANE	EXCAVATION
DRILLING M	ETHOD:	SOLI	STEM AUG	ER		DRILLER: A. UNTAMO
BIT SIZE/T	YPE: 4"	DRAG	,			SAMPLER: A. HEFFRON
SAMPLER T	YPE:					INSPECTOR: A. HEFFRON
HAMMER WE	IGHT:			DRIL	LIN	DATES ELEVATION:
STROKE LEI	NGTH:		ST	ART: 7/10	/92	
PROFILE	NUMBER	SAMPL REC.	ES BLOWS/8 IN	DEPTH	MATER	STRATIGRAPHY
				-2		Brown silty loam with gravel and pebbles.
				- 4	-	Red/brown silt with gravel and pebbles.
6				-6 -8	-	Black/tan to tan/black silty clay.
Ag Ag	7.400 0			10	Red/brown c fragments.	Red/brown clayey silt with shale fragments.
	B409-6			12		End of Boring
				14	-	
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				-22		
				-24	-	
				-26		~
				-28		
				-30		KH0V005940



				T	LOCATIONS DL 403						
							ATION: BI. 403				
JOB NUMBER			MILL TOUR D			ROJECT: K. HOVNANIAN NG AND EXCAVATION					
				HILL	ING	DRILLER: A. UNTAMO					
DRILLING M											
BIT SIZE/T		DHAG) 			·	SAMPLER: A. HEFFRON INSPECTOR: T. BER				
SAMPLER TY					DDTLL	TNIC	DATES				
HAMMER WE					7/10/		FINISH: SAME	ELEVATION: TOTAL DEPTH: 8			
STROKE LEI				1	1/10/		FINION. SAME	TIOTAL DEPTH. 6			
PROFILE	NUMBER	SAMPL REC.	.ES Blows/8 In	DE	PTH	WATER	ST	RATIGRAPHY			
VOVOV							Clayey, silty	loam with			
70,000											
10000				12		_	construction	debris.			
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BORING NO.	: P409-	2		LOC	LOCATION: BI. 403					
JOB NUMBER	R: 9205)			PROJECT: K. HOVNANIAN					
				PILLING	NG AND EXCAVATION					
DRILLING M					DRILLER: A. UNTAMO					
BIT SIZE/T	YPE: 4"	DRAG	}			SAMPLER: A. HEFFRON				
SAMPLER TY						INSPECTOR: T				
HAMMER WE						DATES	ELEVATION:			
STROKE LE	NGTH:		ST	ART: 7/1	0/92	FINISH: SAME	TOTAL DEPTH: 8			
PROFILE	NUMBER	SAMPL REC.	.ES BLOWS/8 IN	DEPTH	MATER	ST	RATIGRAPHY			
	NUMBER	REC.	BLOWS/8 IN	-2 -4 -6 -8 -10 -12 -14 -16 -18 -20 -22 -24 -26	, l. l. l. l. l. l. l. l. l. l. l. l. l.	Clayey, silty l	loam with debris. Water at			
				-28 -30	- -		KH0V005942			



	2422			1,004	TIOL	INDI 402		
BORING NO.						N: BI. 403 K. HOVNANIAN		
JOB NUMBER			MILL TOWN F			EXCAVATION		
				INILLING	AIND		AMO	
DRILLING M						DRILLER: A. UNTAMO SAMPLER: A. HEFFRON		
		DRAG	<u> </u>			INSPECTOR: T. E		
SAMPLER T				וזמח	TNIC	DATES	ELEVATION:	
HAMMER WE				ا ART: 7/8		FINISH: SAME	TOTAL DEPTH: 5	
STROKE LEI				An 1. 1/0/	1	TINION, SAME	TOTAL DEL TIL 3	
PROFILE	NUMBER	SAMPL REC.	ES BLOWS/8 IN	DEPTH	MATER	STRA	TIGRAPHY	
000						Fill material. Cla	avev sand with	
						rocks and debri		
0. • 0. • 0. •	1.			-2	ΓΙ		s. Dedition at	
0.000	S403-1					bottom.		
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	1					Pottom of Dit		
				 -6		Bottom of Pit		
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BORING LOG

J M SORGE INC (Page 1 of 1)

BORING NO.: P403-2 LOCATION: Bl. 403 JOB NUMBER: 92050 PROJECT: K. HOVNANIAN DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION DRILLING METHOD: test pit DRILLER: A. UNTAMO BIT SIZE/TYPE: 4" DRAG SAMPLER: A. HEFFRON INSPECTOR: T. BER SAMPLER TYPE: HAMMER WEIGHT: DRILLING DATES **ELEVATION:** TOTAL DEPTH: 7 STROKE LENGTH: START: 7/7/92 FINISH: SAME SAMPLES DEPTH STRATIGRAPHY **PROFILE** NUMBER REC. BLOWS/8 IN 0.00.00.0 Reddish black loamy soil with 0.00.00 cobbles and shale fragments. -2 Weathered red shale at bottom. S403-1 .0.00.0 6 Bottom of Pit 8 **40** 12 -14 46 **-18** -20 -22 -24 -26 -28 KH0V005944 -30



BORING NO.	P403-	3			LOCA	LOCATION: BI. 403				
JOB NUMBER	R: 92050)				PROJECT: K. HOVNANIAN				
DRILLING C	ONTRAC	TOR:	MILLTO	WN D	RILLING	AND	EXCAVATION			
DRILLING M						DRILLER: A. UNTAMO				
BIT SIZE/T		DRAG				SAMPLER: A. HEFFRON				
SAMPLER TY							INSPECTOR: T. BER			
HAMMER WE							DATES ELEVATION:			
STROKE LE	NGTH:			<u>STA</u>	RT: 7/7	/92	FINISH: SAME TOTAL DEPTH: 7			
PROFILE	SAMPLES NUMBER REC. BLOWS/8 IN					WATER	STRATIGRAPHY			
	S403-1				2 2 4	1 1	Reddish black loam. Weathered red shale at bottom.			
					- 6 -	-				
					- 8		Bottom of Pit			
					-1 0	-				
					- 1 2	F				
					- 1 4	-	·			
					-1 6					
					-1 8	-				
					-20					
					-22					
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					-28 -	-	KH0V005945			
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BORING LOG

L										
BORING NO.	: P404-	-1		LOC	LOCATION: Bl. 404					
JOB NUMBER					PROJECT: K. HOVNANIAN					
DRILLING C	ONTRAC	TOR:	MILLTOWN [RILLING	AND	EXCAVATION				
DRILLING M				·	DRILLER: A. UNTAMO					
BIT SIZE/T		DRAG)			SAMPLER: A. H				
SAMPLER T						INSPECTOR: T.				
HAMMER WE						DATES	ELEVATION:			
STROKE LE	NGTH:		STA	ART: 6/2	5/92	FINISH: SAME	TOTAL DEPTH: 8			
PROFILE	NUMBER	SAMPL REC.	ES BLOWS/8 IN	DEPTH	MATER	STR	RATIGRAPHY			
N 00 00						Grey/black loa	amv soil and			
0.000				-2		construction d				
N 0 0 0 0				[2		Constituction	iediis.			
0.2020	į									
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0 0 0 0 0				-6						
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			-			Bottom of Pit				
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				-28	\vdash					
				+	+		KH0V005946			
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BORING LOG

BORING NO.	: P404-	-2			LOCATION: BI. 404					
JOB NUMBE					ROJECT: K. HOVNANIAN					
				DRILLIN	ING AND EXCAVATION					
DRILLING M					DRILLER: A. UNTAMO					
BIT SIZE/T		DRAG) 		SAMPLER: A. HEFFRON					
SAMPLER T							INSPECTOR: T. E			
HAMMER WE							DATES	ELEVATION:		
STROKE LE	NGTH:		51	AR 1: 8/	26/8	32	FINISH: SAME	TOTAL DEPTH: 9		
PROFILE	PROFILE SAMPLES DI						STRA	TIGRAPHY		
V & V & V							Grey/black loan	ny soil and		
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N SON SON	·			-2	Γ		construction de	DIIS.		
				- 4	-		Red/brown silty	clay.	-	
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				-	-			KH0V005947		
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BORING NO.: P405-1				l: Bl. 405			
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN					
DRILLING CONTRACTOR: MILL	TOWN DRIL	ND !		7.1.10			
DRILLING METHOD: test pit				DRILLER: A. UNT			
BIT SIZE/TYPE: 4" DRAG				SAMPLER: A. HER			
SAMPLER TYPE:		001111	INIC	INSPECTOR: T. E			
HAMMER WEIGHT:	CTART			DATES SAME	ELEVATION:		
STROKE LENGTH:	SIANI			FINISH: SAME	TOTAL DEPTH: 6		
PROFILE NUMBER REC. BLO	NS/8 IN DE	EPTH	MATER	STRA	TIGRAPHY		
N. O. V. O. V.		Ĺ		Red/brown loam	v soil and		
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BORING LOG

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	BORING NO.	: P405-	2			LOCA	OCATION: Bl. 405				
Ì	JOB NUMBER						JECT: K. HOVNANIAN				
					DRILL	AND	D EXCAVATION				
	DRILLING M						DRILLER: A. UNTAMO				
	BIT SIZE/T		DRAG) 				SAMPLER: A. HEFFRON			
	SAMPLER TY						****	INSPECTOR: T. BER			
	HAMMER WE							DATES ELEVATION:			
	STROKE LE	NGTH:		51/	AHI:	6/24		P FINISH: SAME TOTAL DEPTH: 6			
	PROFILE	NUMBER	SAMPL REC.	ES BLOWS/8 IN	DE	PTH	WATER	STRATIGRAPHY			
	0 . 0 . 0							Red/brown loamy soil and			
	· · · · · · · · · · · · · · · · · · ·							·			
	0.00.00			İ	-2			construction debris.			
	0.000				Ι.						
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BORING NO.	: P405-	3		L	LOCATION: Bl. 405					
JOB NUMBER						ROJECT: K. HOVNANIAN				
				RILLI	AND	EXCAVATION				
DRILLING M							DRILLER: A. UNTAMO			
BIT SIZE/T		DRAG) 				SAMPLER: A. H			
SAMPLER T							INSPECTOR: T			
HAMMER WE							DATES	ELEVATION:		
STROKE LEI	NGTH:		51/	ARI: 6	3/24	/92	FINISH: SAME	TOTAL DEPTH: 6		
PROFILE	NUMBER	SAMPL REC.	ES BLOWS/6 IN	DEP.	ТН	MATER	STI	RATIGRAPHY		
0.000					Į		Red/brown loa	amv soil and		
				-2		_	construction	-		
0.00.0				[2		_	Constituction (debits.		
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BORING NO.					ATION: Bl. 408			
JOB NUMBER				1	JECT: K. HOVNANIAN			
					AND	EXCAVATION		
DRILLING M				ER		DRILLER: A. UNTAMO	\dashv	
BIT SIZE/T		DHAG				SAMPLER: A. HEFFRON INSPECTOR: ANDREW BER		
SAMPLER TY				ווזמת	TNIC	DATES ELEVATION:		
HAMMER WE				DRILI ART: 7/9/		FINISH: SAME TOTAL DEPTH: 6	\dashv	
STRUKE LEI	1			1111.1707		THIOT. CAPIL TOTAL BETTI.	\dashv	
PROFILE	NUMBER	SAMPL REC.	ES BLOWS/6 IN	DEPTH	WATER	STRATIGRAPHY		
0.000				-	-	Silty loam with construction		
0.0.0.0				-2		debris		
0000				4	-	Yellowish to reddish brown silty		
0000					t i	sand with fine gravel		
	B408-1			-6	-	End of Boring.	1	
				-8	-			
				10	-			
				12	-			
				-14	-			
				10				
				-1 6			i	
				-1 8	-			
	İ			-20	-			
			1 1 1 1 1 1	-22	-			
				-24	1-1			
				26				
		-		L -28	+			
				-30	<u>+</u>	KH0V005951		



BORING NO.: B406-2 LOCATION: BI. 406											
JOB NUMBER	R: 92050)		1		K. HOVNANIAN					
					AND	EXCAVATION					
DRILLING METHOD: SOLID STEM AUGER DRILLER: A. UNTAMO											
BIT SIZE/T		DRAG			,, es -	SAMPLER: A. HEFFRON					
SAMPLER TY						INSPECTOR: ANDREW BER					
HAMMER WE						DATES ELEVATION:					
STROKE LE	VGTH:		STA	ART: 7/9/	92	FINISH: SAME TOTAL DEPTH: 10.5					
PROFILE	NUMBER	SAMPL REC.	ES BLOWS/8 IN	DEPTH	WATER	STRATIGRAPHY					
0.0000		,		-2 -4		Reddish-brown silty loam with construction debris.					
				- 6 -8		Reddish— brown silty sand with gravel and construction debris.					
0.00.00	B408-2			40		Reddish-brown clayey silt with shale fragments and rubble.					
				-1 2	1	Bottom of boring.					
				-1 4	-						
	1			-16	1						
				 18							
				20							
				-22	<u> </u>						
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				26							
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BORING NO.						N: Bl. 406		
JOB NUMBE	R: 92050					: K. HOVNANIAN		
					ANU	EXCAVATION-		
DRILLING M				<u>EK</u>		DRILLER: A. UNTAMO		
BIT SIZE/T		UHAG				SAMPLER: A. HEFFRON INSPECTOR: ANDREW BEF		
SAMPLER T				ווזמת	TNIC	DATES ELEVAT		
HAMMER WE				ART: 7/9/			DEPTH: 8.5	
STROKE LE	T			101.1707	1	THUST. SAME TOTAL L	111. 0.0	
PROFILE	NUMBER	AMPL REC.	ES BLOWS/6 IN	DEPTH	WATER	STRATIGRAP	1 Y	
0.000					L	Silty loam with construc	tion	
	111111111111111111111111111111111111111			-2	_	debris.		
				-4		Silty, clayey yellow-bro	wn sand	
				}	-	with fine gravel.		
*	7 2400 3			-6		Don't many /banks with a		
	B408-3				<u> </u>	Dark grey/brown silty s	and with	
E + 22 cale				- 8		fine gravel.		
				40		End of Boring.		
		•	•	12				
			}	-	1			
				 1 4				
; }				10				
			1	 1 6				
				-18				
				20	1			
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	:		1	-24				
	* ************************************	1		-26	1			
				-28	-	VI	10V005953	
				30		N	104000300	



BORING NO.: B	408-4		LOCA	LOCATION: Bl. 406					
JOB NUMBER: 9				PROJECT: K. HOVNANIAN					
		AILLTOWN DE	RILLING	LING AND EXCAVATION					
DRILLING MET	HOD: SOLID	STEM AUGE	R	DRILLER: A. UNTAMO					
BIT SIZE/TYP	E: 4" DRAG				SAMPLER: A. HEFFRON				
SAMPLER TYPE					INSPECTOR: ANDREW BER				
HAMMER WEIGH	HT:				DATES ELEVATION:				
STROKE LENG	TH:	STA	RT: 7/9/	92	FINISH: SAME TOTAL DEPTH: 11.0				
PROFILE NU	SAMPL MBER REC.	ES BLOWS/8 IN	DEPTH	WATER	STRATIGRAPHY				
0.0.0		-	-2 -4	-	Dark grey silty loam with construction debris.				
0 10 10 1		·	-6		Brown/yellow-brown silty, gravelly sand.				
			-8 - 1 0		Reddish-brown silty sand with minor gravel.				
B4	408-4		-12 -	-	End of Boring.				
			⊣ 4 -	-					
-			-1 6 -						
			⊣ 8 -						
			20 -						
			- 22	-					
			- 24						
			- 26	-					
			-28						
			-30		KH0V005954				



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BORING LOG

202112	D 400	<u>-</u>		1,004	TTO	N. D. 400				
BORING NO.: B408-5 LOCATION: Bl. 406 JOB NUMBER: 92050 PROJECT: K. HOVNANIAN										
JOB NUMBER			4TL 1 TO 2 12 1							
					AND	EXCAVATION				
DRILLING M				EK		DRILLER: A. UNTAMO				
BIT SIZE/T		DRAG				SAMPLER: A. HEFFRON				
SAMPLER TY						INSPECTOR: ANDREW BER				
HAMMER WE						DATES ELEVATION:				
STROKE LE	NGTH:		51/	ART: 7/9/	92 1	FINISH: SAME TOTAL DEPTH: 9.50				
PROFILE	S NUMBER	AMPL REC.	ES BLOWS/8 IN	DEPTH	WATER	STRATIGRAPHY				
0000				- 2		Dark grey silty sand.				
0.000			· ·	-4	-	Grey/brown silty sand with construction debris.				
0.0.0				6		Grey/brown silty, gravelly sand with construction debris.				
				- 8		Yellow/brown silty, clayey sand with fine gravel.				
	B408-5			H0 -	- \	Dark brown silty sand with fine				
	1			-1 2	F	\gravel.				
				-14	<u></u>	End of Boring.				
				-1 6	-					
				-18	_					
				-20						
				22	_					
				24						
				26						
				-28		WINNERE				
		•		30		KH0V005955				



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BORING NO.	: B408-	·6		LOCA	LOCATION: Bl. 406					
JOB NUMBER				PROJ	PROJECT: K. HOVNANIAN					
			MILLTOWN E	RILLING	AND	EXCAVATION				
DRILLING M						DRILLER: A. UN	ITAMO			
BIT SIZE/T						SAMPLER: A. HE	EFFRON			
SAMPLER T						INSPECTOR: AN	NDREW BER			
HAMMER WE	IGHT:			DRILL	ING	DATES	ELEVATION:			
STROKE LE		_	ST	ART: 7/9/	92	FINISH: SAME	TOTAL DEPTH: 7.5			
PROFILE	NUMBER	SAMPL REC.	ES BLOWS/8 IN	DEPTH	WATER	STR	ATIGRAPHY			
PHUFILE 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	B408-8	REC.	BLOWS/8 IN	-2 -4 -6 -8 -10 -12 -14 -16 -18 -20 -22 -24 -26	MATERIAL PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPE	Grey-brown si construction d	Ity sand with ebris.			
				-28	-		KH0V005956			



BORING NO.:						N: Bl. 408			
JOB NUMBER						K. HOVNANIAN			
					AND	EXCAVATION DRILLER: A. UN	ITAMO		
DRILLING MI				ER		SAMPLER: A. HI			
BIT SIZE/T		UHAG				INSPECTOR: A			
SAMPLER TYPE: INSPECTOR: ANDREW BER HAMMER WEIGHT: DRILLING DATES ELEVATION:									
			ST.	اعداد / ART: 7/9		FINISH: SAME	TOTAL DEPTH: 6.0		
STROKE LE				1111.7797	ГТ	T THIOTI, OATIC	TOTAL BLI III. 0.0		
PROFILE	NUMBER	SAMPL REC.	ES BLOWS/8 IN	DEPTH	WATER	STR	ATIGRAPHY		
0.0.0				-2 -4	- - -	Grey-brown si and construct	Ity loam with gravel ion debris.		
	B408-7			6		Reddish-brow	n silty, clayey sand vel.		
				-8 - -10		End of Boring	•		
				-12					
				}	-		:		
				H4	F				
				H6	F				
				H8	F				
				- 20	-				
				-22	-				
				-24	-				
				26	-				
				-28 - -30	-		KH0V005957		

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BORING LOG

BORING NO.: B406-8	LOCATION	
JOB NUMBER: 92050		K. HOVNANIAN
DRILLING CONTRACTOR: MILLT	OWN DRILLING AND	DRILLER: A. UNTAMO
DRILLING METHOD: SOLID STE	M AUGER	SAMPLER: A. HEFFRON
BIT SIZE/TYPE: 4" DRAG	,	INSPECTOR: ANDREW BER
SAMPLER TYPE:	DDTU TNC	
HAMMER WEIGHT:	DRILLING	
STROKE LENGTH:	START: 7/9/92	FINISH: SAME TOTAL DEPTH: 10.5
PROFILE NUMBER REC. BLOWS	S/8 IN DEPTH	STRATIGRAPHY
		Yellowish-brown loam with
7UUU		construction debris.
0.0000		construction debits.
0.000		
	-4	Grov-brown to reddish-brown
0.00.00	 	Grey-brown to reddish-brown
.0.0.00	 6	silty, clayey sand with const.
	h h l	debris.
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0.00.00	+ +	
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B408-8		End of Paring
	H2 -	End of Boring.
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	H8 -	·
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	-	KH0V005958
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BORING NO.: B408-9						LOCATION: Bl. 406				
JOB NUMBER	3: 92050)				PROJECT: K. HOVNANIAN				
DRILLING C	ONTRAC	TOR:	MILLTOW	N DRIL	AND	EXCAVATION				
DRILLING M				UGER		DRILLER: A				
BIT SIZE/T	YPE: 4"	DRAG)				A. HEFFRON	_		
SAMPLER T	YPE:						R: ANDREW BER			
HAMMER WE	IGHT:				_		DATES	ELEVATION:		
STROKE LE	VGTH:			<u>START</u>	: 7/10,	/92	FINISH: SAME	TOTAL DEPTH: 11.0		
PROFILE	PROFILE NUMBER REC. BLOWS/8 IN			IN DE	EPTH	WATER	Ş	STRATIGRAPHY		
				-2		-	Black coal	ash and loam.		
				-4			Red/brown	gravelly silt.		
				-6		-				
				-8 - -1(-	Soft reddis	sh shale.		
	B408-9			- - - :			End of Boi	ring.		
				}	4	-				
				-4	6	-				
				H	8					
				-2	20					
				-2	22	-				
				-2	24	-				
				-	26	-				
·					28	-		KHOV005959		
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BORING NO.: P407-1					LOCATION: BI. 403				
JOB NUMBER					PROJECT: K. HOVNANIAN				
				ORILI	LING	AND	ID EXCAVATION		
DRILLING M							DRILLER: A. UNTAMO		
BIT SIZE/T		DRAG)				SAMPLER: A. HEFFRON		
SAMPLER T		.,.					INSPECTOR: T. BER		
HAMMER WE							IG DATES ELEVATION:		
STROKE LENGTH: START						92	FINISH: SAME TOTAL DEPTH: 10		
PROFILE	ROFILE NUMBER REC. BLOWS/8 IN			DE	PTH	MATER	STRATIGRAPHY		
				2		-	Dark yellow/light brown sandy loam.		
				4	-4		Light brown silty loam.		
				-6			Weathered red shale with sandy		
100 the the the the							silt.		
				18		L			
			}						
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	İ			[10			Bottom of Pit		
				12	٠.	-			
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				-20)	-			
				-22	2	-			
				-24	1	_			
				-26	3				
				-28	3	F			
				30)	_	KH0V005960		



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BORING NO.: P408-1						LOCATION: BI. 408				
	JOB NUMBER					PROJECT: K. HOVNANIAN				
					DRILL	ING	AND	EXCAVATION		
	DRILLING M							DRILLER: A. UN		
	BIT SIZE/T		DRAG	}				SAMPLER: A. HE		
	SAMPLER T							INSPECTOR: T.		
	HAMMER WE							DATES	ELEVATION:	
ļ	STROKE LE	NGTH:		J ST.	ART:	7/6/	92	FINISH: SAME	TOTAL DEPTH: 8	
	PROFILE	NUMBER	SAMPL REC.	.ES BLOWS/6 IN	DE	PTH	MATER	STR	ATIGRAPHY	
	DODO DODO DODO DODO DODO DODO DODO DOD	NUMBER	REC.	BLOWS/8 IN	- 2 - 4 - 6 - 8 - 10 - 12 - 14 - 16 - 18 - 20 - 22		VM.		layey unsorted	
					-24	,	_			
					-26	}	-			
					-28 -30		 - -		KH0V005961	
	1		1	1		j				



BORING NO.: P408-2					LOCATION: Bl. 408					
JOB NUMBER: 92050						PROJECT: K. HOVNANIAN				
DRILLING C	ONTRAC	TOR:	MILLTOWN E	RIL	LING	AND	EXCAVATION			
DRILLING M						DRILLER: A. U	NTAMO			
BIT SIZE/T					SAMPLER: A. H	HEFFRON				
SAMPLER T					INSPECTOR: 1	. BER				
HAMMER WE	IGHT:				DRILL	ING	DATES	ELEVATION:		
STROKE LE	NGTH:		ST	ART	: 7/8/	92	FINISH: SAME	TOTAL DEPTH: 8	_	
PROFILE	NUMBER	SAMPL REC.	.ES BLOWS/8 IN	DE	PTH	MATER	ST	RATIGRAPHY	·	
V 8 V 8 V							Fill material.	Clayey unsorted		
100 h	1						sand and deb			
N. S. N. S. N.	4	İ		-2		ΓΙ	sand and der	л 15.		
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N. 59, 59				1-4						
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N. O. O. O.		İ		 6		- 1				
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V. V. V. V	1			18			D-114 DH		-	
				+			Bottom of Pit	'		
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			1	H2	<u>-</u>	-				
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								KH0V005962		

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BORING LOG

BORING NO.:					LOCATION: Bl. 408				
JOB NUMBER	R: 92050)				K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION									
DRILLING M				DRILLER: A. UNT.					
BIT SIZE/T		DRAG	i	SAMPLER: A. HEF					
SAMPLER TY	PE:			INSPECTOR: T. B					
HAMMER WE		···				DATES	ELEVATION:		
STROKE LE	NGTH:		ST	ART: 7/6	3/92	FINISH: SAME	TOTAL DEPTH: 9		
PROFILE	NUMBER	SAMPL REC.	ES BLOWS/8 IN	DEPTH	MATER	STRA	TIGRAPHY		
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				-2 -4	-	Fill material. Classand and debris			
0.0.0				-6	17	Coal ash and bu	ırnt wood.		
0.00.00				-8		Red/brown silty cobbles, gravel,			
				10		Bottom of Pit			
				12	_				
				 4	-				
				-1 6	-				
				-1 8					
				20	-				
				-22	- - -				
				24	-				
				-26	-				
				-					
				-28	-		W10120000		
			·	-30			KHOV005963		



BORING NO.: P408-4		ION: Bl. 408				
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN				
DRILLING CONTRACTOR: MILLTOWN DE	RILLING A					
DRILLING METHOD: test pit	DRILLER: A. UNTAMO					
BIT SIZE/TYPE: 4" DRAG	SAMPLER: A. HEFFRON					
SAMPLER TYPE:		INSPECTOR: T. BER				
HAMMER WEIGHT:	DRILLI	NG DATES ELEVATION:				
STROKE LENGTH: STA	RT: 7/6/92	2 FINISH: SAME TOTAL DEPTH: 10				
PROFILE SAMPLES NUMBER REC. BLOWS/8 IN	DEPTH	STRATIGRAPHY				
	-2	Fill material. Clayey unsorted sand and debris.				
· · · · · · · · · · · · · · · · · · ·	-4	Red/brown silty sand with cobbles, and pebbles.				
· · · · · · · · · · · · · · · · · · ·	-6 -8 -					
· · · · · · · · · · · · · · · · · · ·	10					
	-1 2	Bottom of Pit				
	44					
	-16					
	-18 - · -					
	-20	•				
	-22					
	-24	• · · · · · · · · · · · · · · · · · ·				
	- 26					
	-28 - -30	KH0V005964				



DODING NO	. 0.400			LOCA	TIO	N: DI 400			
BORING NO.					LOCATION: BI. 408 PROJECT: K. HOVNANIAN				
			MILL TOWN C		<u> </u>				
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION DRILLING METHOD: test pit DRILLER: A. UNTAMO									
DRILLING METHOD: test pit BIT SIZE/TYPE: 4" DRAG DRILLER: A. UNTAMO SAMPLER: A. HEFFRON									
SAMPLER TYPE: INSPECTOR: T. BER									
HAMMER WEIGHT: DRILLING DATES ELEVATION:									
			CT	ا ART: 7/8		FINISH: SAME TOTAL DEPTH: 10			
STROKE LEI	i			AN 1. 1707		FINISH. SAME TOTAL DEPTH. 10			
PROFILE	NUMBER	SAMPL REC.	ES BLOWS/6 IN	DEPTH	WATER	STRATIGRAPHY			
	S408-15			-2 -4 -6		Fill material. Coal ash and loamy soil, layered with remnant asphalt paving. Fill material. Clayey unsorted sand and debris.			
				-8 -	- - -	Bluish, stained clay. Strong PHC odor.			
				H0 - H2		Weathered red/brown shale and sandy silt.			
				14	- -	Bottom of Pit			
·				-16					
	}			-1 8					
				-20					
				-22					
				24					
				26					
				28		·			
		·		30	_	KH0V005965			



BORING NO.: P408-6 JOB NUMBER: 92050 PROJECT: K. HOVNANIAN DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION DRILLING METHOD: test pit BIT SIZE/TYPE: 4" DRAG SAMPLER TYPE: HAMMER WEIGHT: STROKE LENGTH: PROFILE SAMPLES NUMBER REC. BLOWS/8 IN DEPTH Fill material. Coal ash and loam soil, layered with remnant asphalasing. Fill material. Clayey unsorted sand and debris. Bottom of Pit	
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION DRILLING METHOD: test pit BIT SIZE/TYPE: 4" DRAG SAMPLER: A. HEFFRON SAMPLER: A. HEFFRON INSPECTOR: T. BER HAMMER WEIGHT: DRILLING DATES ELEVATION: STROKE LENGTH: START: 7/6/92 FINISH: SAME TOTAL DEPTH: 7 PROFILE NUMBER REC. BLOWS/6 IN DEPTH FILL STRATIGRAPHY ** 0 * 0 * 0 * 0 * 0 * 0 * 0 * 0 * 0 *	
DRILLING METHOD: test pit BIT SIZE/TYPE: 4" DRAG SAMPLER TYPE: HAMMER WEIGHT: STROKE LENGTH: PROFILE SAMPLES NUMBER REC. BLOWS/8 IN DEPTH Fill material. Coal ash and loam soil, layered with remnant asphapaving. Fill material. Clayey unsorted sand and debris. Bottom of Pit	
BIT SIZE/TYPE: 4" DRAG SAMPLER TYPE: INSPECTOR: T. BER HAMMER WEIGHT: DRILLING DATES ELEVATION: STROKE LENGTH: START: 7/6/92 FINISH: SAME TOTAL DEPTH: 7 PROFILE SAMPLES STRATIGRAPHY STRATIGRAPHY Fill material. Coal ash and loam soil, layered with remnant asphapaving. Fill material. Clayey unsorted sand and debris. Bottom of Pit 10 - 12 - 14 - 14 - 14	
SAMPLER TYPE: HAMMER WEIGHT: STROKE LENGTH: PROFILE NUMBER SAMPLES REC. BLOWS/Ø IN DEPTH Fill material. Coal ash and loam soil, layered with remnant asphapaving. Fill material. Clayey unsorted sand and debris. Fill material. Clayey unsorted sand and debris. Bottom of Pit	
HAMMER WEIGHT: STROKE LENGTH: START: 7/6/92 FINISH: SAME STRATIGRAPHY STRATIGRAPHY Fill material. Coal ash and loam soil, layered with remnant asphapaving. Fill material. Clayey unsorted sand and debris. Bottom of Pit	
STROKE LENGTH: SAMPLES NUMBER REC. BLOWS/0 IN STRATIGRAPHY Fill material. Coal ash and loam soil, layered with remnant asphapaving. Fill material. Clayey unsorted sand and debris. Bottom of Pit STRATIGRAPHY Fill material. Clayey unsorted sand and debris. Bottom of Pit	
PROFILE SAMPLES NUMBER REC. BLOWS/0 IN DEPTH STRATIGRAPHY	
Fill material. Coal ash and loam soil, layered with remnant asphapaving. Fill material. Clayey unsorted sand and debris. Bottom of Pit	
soil, layered with remnant asphapaving. Fill material. Clayey unsorted sand and debris. Bottom of Pit	
soil, layered with remnant asphapaving. Fill material. Clayey unsorted sand and debris. Bottom of Pit	
paving. Fill material. Clayey unsorted sand and debris.	ונ
Fill material. Clayey unsorted sand and debris. -8 -10 -12 -14 -14 -14	
-6 - sand and debris. -8 - Bottom of Pit -10 - 12 - 14 - 14 - 14	
-6 - sand and debris. -8 - Bottom of Pit -10 - 12 - 14 - 14 - 14	
-8 - Bottom of Pit -101214 -	
-10 -12 -14 -14	
-10 -12 -14 -14	
12 -14 -	
12 -14 -	
14 -14	
14 -14	
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KHOV005966	

BORING NO.	ORING NO.: B408-11 LO					LOCATION: BI. 408			
· · · · · · · · · · · · · · · · · · ·							K. HOVNANIAN		
DRILLING C	ONTRA	CTOR:	MILLTOWN E	EXCAVATION					
DRILLING M	ETHOD:	SOLI	DRILLER: A. UN	ITAMO					
BIT SIZE/T	EFFRON								
SAMPLER TYPE: INSPECTOR: A. HEFFRON									
HAMMER WEIGHT: DRILLING DATES ELEVATION:									
STROKE LE	NGTH:		ST	ART	: 6/24	/92	FINISH: SAME	TOTAL DEPTH: 23	
PROFILE	, NUMBER	SAMPL REC.	ES BLOWS/8 IN	DE	PTH	WATER	STR	ATIGRAPHY	
					•		Black / grov cla	avey fine cand	
				† _			Diack/grey Cid	ayey fine sand.	
	400 44			-2		-			
	408-11A	1		H		†	,		
	1			-4		 			
				+		-			
272777	408-19B			-6					
7/1/1/	1			-		- 1	Red/brown fin	e sandy clay with	
17/7/7			,	1-8				ater at 12-15 ft.	
							inic grates. N	G(C) G(12 10 1).	
1/1/1/	1	1		10					
171717				HO	,	ΓΙ			
	1			Ι		T			
7 / 7 / 7 /	1	ŀ		H2	•	1			
111111				H		- \$			
	1			H4	,	H			
757575	1		Ì	+		-			
17/7/17		1	1	H6	}	L 1			
	1			1					
7 67 67 6	1	1		18)	L			
171717	1)	Γ			
1/1/1//	1	1			_				
	1			-21	U				
171717	7			+		†			
	7	1		-2	2	 			
1:11:11:1	4	1		+					
				-2	4.	-	End of Boring		
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BORING NO.					LOCATION: Bl. 408							
JOB NUMBER						K. HOVNANIAN						
	DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION DRILLING METHOD: SOLID STEM AUGER DRILLER: A. UNTAMO											
				ER		DRILLER: A. UN						
BIT SIZE/T		DRAG	}			SAMPLER: A. HE						
SAMPLER T						INSPECTOR: A.						
HAMMER WE						DATES	ELEVATION:					
STROKE LE	NGTH:		I ST.	ART: 8/24	/92	FINISH: SAME	TOTAL DEPTH: 5.5					
PROFILE	NUMBER	SAMPL REC.	ES BLOWS/8 IN	DEPTH	WATER	STR	ATIGRAPHY					
					-	Concrete, asph	nalt paving.					
	408-12A			-2		Unsorted sand	with gravel and					
				-4	-	\ debris.						
	408-12B			}	1	Reddish/brown	sandy clay.					
	400-128		:	6		End of Boring						
				-8	-							
			H0	0 -								
				12								
				<u> </u>								
				- -16	-		:					
				-18								
				- -20								
			,	-22								
				24	-							
				- 26								
				-28								
				-30			KHOV005968					



•										
	BORING NO.	B408-	-13		I	LOCATION: BI. 408				
-	JOB NUMBER	3: 9205	0		F	PROJECT: K. HOVNANIAN				
Ì						ING AND EXCAVATION				
I	DRILLING M	ETHOD:	SOLI	STEM AUG	ER					
I	BIT SIZE/T	YPE: 4'	'DRAG	}				SAMPLER: A. HEFFRON		
I	SAMPLER T							INSPECTOR: A. HEFFRON		
	HAMMER WE							DATES ELEVATION:		
ļ	STROKE LE	NGTH:		ST	ART:	FINISH: SAME TOTAL DEPTH: 5.5				
	PROFILE	NUMBER	SAMPL REC.	.ES BLOWS/8 IN	DEP	тн	WATER	STRATIGRAPHY		
					-	-		Concrete.		
1					-2			Black/brown coarse sand and		
		408-13A			+		}	\		
					-4		-	\ gravel.		
					+			Dark brown/red clay with some		
		408-138			-6		-	sand.		
							-	End of Boring		
			•		12		-			
	,				14		- -			
					 16		- -			
					+	-				
					-18	•	-			
		-			-20		-			
					-22		F			
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						;	-			
							-			
					120		-	KH0V005969		



BORING NO.	: B408-	-14			LOCATION: BI. 408				
JOB NUMBER					PROJECT: K. HOVNANIAN				
					G AND	EXCAVATION			
DRILLING M				ER.	DRILLER: A. UNTAMO				
BIT SIZE/T	YPE: 4"	DRAG)			SAMPLER: A. H			
SAMPLER T						INSPECTOR: A	. HEFFRON		
HAMMER WE						DATES	ELEVATION:		
STROKE LE	NGTH:		STA	ART: 6/	24/92	FINISH: SAME	TOTAL DEPTH: 5.5		
PROFILE	NUMBER	SAMPL REC.	.ES BLOWS/6 IN	DEPT	HATER	STF	RATIGRAPHY		
						Concrete.			
			ŀ	-2					
	408-14A					Red/brown sa	indy clay.		
er er er er er er		1							
	İ			-4					
	408-14B				Γ				
				-6		End of Boring			
				-8					
				-	- 1				
				10	-				
				12					
				F	+	*			
				14					
				-16	-				
<u>'</u>					†				
				H8 -	FI				
				20	-				
				-22	F				
				-24	<u> </u>				
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BORING LOG

									
BORING NO.				LOCATION: Bl. 408					
JOB NUMBE				PROJECT: K. HOVNANIAN					
		MILLTOWN D	RILLING	AND	EXCAVATION				
L	ETHOD: SOLI				DRILLER: A. UNT	ГАМО			
	YPE: 4" DRAG				SAMPLER: A. HE				
SAMPLER TYPE: INSPECTOR: A. HEFFRON									
HAMMER WE			DRIII	ING	DATES	ELEVATION:			
STROKE LE		STA			FINISH: SAME	TOTAL DEPTH: 11			
STHORE EL			111.7710	T		TIOTAL DEL TIL II			
PROFILE	SAMPI NUMBER REC.	BLOWS/6 IN	DEPTH	MATER	STRA	TIGRAPHY			
					Droup gravelly	loom			
			-		Brown gravelly	iodiii.			
4 4 4 4			-2	- 1					
THE PETER THE THE			}	+ 1					
			-4	 - 					
14 14 14 14			-	1					
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14. 14. 14. 14.		1							
14 4 14			6						
14 14 14 14			-8						
والمنظمة المنظمة المنظمة			†	1					
THE HE HE HE			H0	-					
2.2.2.2.2.	B408-20		}						
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			-30	<u> </u>		KHOV005971			



BORING NO.: B408-21						LOCATION: BI. 408				
JOB NUMBER					PROJECT: K. HOVNANIAN					
					LING AND EXCAVATION					
DRILLING M				GER						
BIT SIZE/T		DRAG			SAMPLER: A. HEFFRON					
SAMPLER TY							INSPECTOR: A. I			
HAMMER WE							DATES	ELEVATION:		
STROKE LE	NGTH:		SI	ART	: 7/10/	/92	FINISH: SAME	TOTAL DEPTH: 11		
PROFILE	NUMBER	SAMPL REC.	ES BLOWS/8 IN	DE	PTH	MATER	STRA	TIGRAPHY		
				2 4			Dark brown gra	velly loam.		
						-	Black/tan very	fine sandy clay.		
				- 8)		Red/brown clay fragments and	vey silt with shale gravel.		
	B408-21	B408-21		12	2		End of Boring			
				H44	4	-				
				16	3	-				
				 1 8	3	-				
				-2	0					
				-2	2					
				-2	4	-				
			Property of the second	-2		F				
				-2	8					
		-			30			KH0V005972		



											
BORING NO.: B408-22 LOCATION: Bl. 408											
	JOB NUMBER: 92050 PROJECT: K. HOVNANIAN										
	DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION										
DRILLING M				ER		DRILLER: A. UN					
BIT SIZE/T		DRAG)			SAMPLER: A. H					
SAMPLER T						INSPECTOR: A.					
HAMMER WE						DATES	ELEVATION:				
STROKE LEI	VGTH:		STA	ART: 7/10	/92	FINISH: SAME	TOTAL DEPTH: 11				
PROFILE		SAMPL REC.	ES BLOWS/6 IN	DEPTH	WATER	STR	ATIGRAPHY				
	B408-22		BLUMS/O IN	-2 -4 -6 -8 -10 -12 -14 -16 -18	<u> </u>	Dark brown groal ash with debris.					
				-20 -22	- - - -						
				-24	- -						
		1		-26 -	-						
				-28 - -30	-		KH0V005973				



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BORING LOG

BORING NO.	-23			LOCATION: Bl. 408							
JOB NUMBER					PROJECT: K. HOVNANIAN						
DRILLING C	ONTRAC	TOR:	MILLTOWN E	DRILL	LLING AND EXCAVATION						
DRILLING M	ETHOD:	SOLI	STEM AUG	ER	DRILLER: A. UNTAMO						
BIT SIZE/T	YPE: 4'	DRAG	;					SAMPLER: A. I	HEFFRON		
SAMPLER T	YPE:							INSPECTOR: A	A. HEFFRON		
HAMMER WE	IGHT:				DRILL	ING	D	ATES	ELEVATION:		
STROKE LE	NGTH:		STA	ART:	7/10/	/92	F	INISH: SAME	TOTAL DEPTH: 11		
PROFILE	NUMBER	SAMPL REC.	ES BLOWS/8 IN	DEF	тн	WATER		STRATIGRAPHY			
0.0000							·	Red/brown at	ravelly loam with		
0 0 0		}									
0.00.00	}			-2				construction debris.			
. 0. 0. 0	1										
0 0 0				-4		-					
.0.0.0				†		- 1					
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1/1/1/1/	[[][][][][][][][][][][][][][][][][][][Black/tan fin	e sandy clay.		
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17/1/1/1/		Ì		H0		-	ĺ				
7.7.7.7.7.7	B408-23			-	,	-			-		
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				-22		-					
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				-30)			-	KHOV005974		

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BORING LOG

BORING NO.	B408-	24	•		LOCATION: BI. 408					
JOB NUMBER					PROJECT: K. HOVNANIAN					
<u></u>					ING A	AND	DEXCAVATION			
DRILLING M				ER			DRILLER: A. UNTAMO			
BIT SIZE/T	YPE: 4"	DRAG)				SAMPLER: A. HEFFRON			
SAMPLER T							INSPECTOR: A. HEFFRON			
HAMMER WE							G DATES ELEVATION:			
STROKE LE	NGTH:		STA	ART:	7/10/	/92	FINISH: SAME TOTAL DEPTH: 11			
PROFILE	NUMBER	SAMPL REC.	ES BLOWS/8 IN	DE	РТН	MATER	STRATIGRAPHY			
0.00.00				-2			Brown loam with coal ash and construction debris.			
				-4		-	Red/brown gravelly silt.			
				6		-				
4 4 4 4				-8	;					
1.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7							Light-brown fine sandy, silty			
				10		-	clay.			
	B408-24			12	End of Bo		End of Boring			
				14	٠	-				
				16		_				
				-18	-18					
				-20)	_				
				-22	<u>.</u>	-				
			-24	1	-					
				-26	3					
			-28	3						
				30)	L	KH0V005975			

APPENDIX B LABORATORY ANALYTICAL REPORTS

ī,

SEP 6 1989

ENVIROTECH RESEARCH, INC.

102

777 New Durham Road Edison, New Jersey 08817 Tel: (201) 549-3900 Fax: (201) 549-3679

September 5, 1989

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876

Attention: Mr. Michael McGowan

Re: Job No. 5650 - Hov Site C

Dear Mr. McGowan:

Enclosed are the results you requested for the following samples taken 8/18/89 at Hov Site C:

Lab No.	Client ID	Analysis Requested
27830 27831	T88-WIL (1941)	PHC PHC

Please call me at 549-3900 if you have any questions.

Very truly yours,

Michael/J. Urban Laboratory Manager

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876 Attention: Mr. Michael McGowan

Report Date: 9/5/89

Job No.: 5650 - Hov Site C N.J. Certified Lab No. 12543

QA Batch 1451

PETROLEUM HYDROCARBONS

Envirotech Sample #	<u>Client ID</u>		roleum Hydrocarbons mg/kg (Dry Wt.)
27830	T88-WIL	81.9	36
27831	T88-WIL-1	86.1	85

Detection Limit for Petroleum Hydrocarbons is 25 mg/kg.

777 New Durham Road Edison, New Jersey 08817 Tel: (201) 549-3900 Fax: (201) 549-3679

September 11, 1989

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876

Attention: Mr. Michael McGowan

Re: Job No. 5649 - Hov Site E

Dear Mr. McGowan:

100

Enclosed are the results you requested for the following samples taken 8/18/89 at Hov Site E:

Lab No.	Client ID	Analysis Requested
27827 ·	B405-1	Priority Pollutant +40 w/CN and Phenols
27828	B404-4	PHC
27829	B404-3	PHC

Please call me at 549-3900 if you have any questions.

Very truly yours,

Michael J. Urban Laboratory Manager

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876

CT.

Attention: Mr. Michael McGowan

Report Date: 9/11/89

Job No.: 5649 - Hov Site E N.J. Certified Lab No. 12543

QA Batch 1382

VOLATILE ORGANICS

			86.9%	Solid	d	Detection	n Limit
	<u>Parameter</u>	<u>Units:</u>	ug/kg	(Dry	Weight)	<u>Units:</u>	ug/kg
	Benzene		ì	4D		2	5
	Bromodichloromethane		1	ND		2	5
	Bromoform		ľ	4D		2.5	5
	Bromomethane		ľ	1D		50)
	Carbon tetrachloride		1	ND		2.	5
	Chlorobenzene		1	ND		2	5
	Chloroethane		1	ND		51	כ
	2-Chloroethylvinyl et	cher	1	ND		5(0
	Chloroform			8.9J	3	2.	5
	Chloromethane		1	ND		5 (כ
	Dibromochloromethane		1	ND		2!	
	1,1-Dichloroethane		1	ND		2!	
	1,2-Dichloroethane		1	ND		2.	
	1,1-Dichloroethene		1	ND		. 2!	
	trans-1,2-Dichloroet	nene	J	4D		2	
	1,2-Dichloropropane		1	ND		2.	
	cis-1,3-Dichloroprope	ene	1	ND.		2	
	trans-1,3-Dichloropro	opene	1	ND		2	
	Ethyl benzene		1	ND		2	5
•	Methylene chloride		1	ND.		2!	
	1,1,2,2-Tetrachloroet	chane	ı	ND.		2.	
	Tetrachloroethene		1	ND		2	
	Toluene		ì	ND.		2	
	1,1,1-Trichloroethan			6.4JI	3	25	
	1,1,2-Trichloroethan	9	1	D.		2	
	Trichloroethene		ì	MD.		2	
	Trichlorofluorometha	ne	ì	ND.		2	
	Vinyl chloride			ND		5	
	Xylenes (Total)		1	ND		2.	5

Client: 3.M.	Sorge
Client Sample Identification:	
Sample No.: 27827 OA Batch No.:	: \\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \
	THE COMPOUNDS
\	ENTIFIED COMPOUNDS
Fraction: VOC	Concentration Units: PPM PPB
COMPOUND NAME	Retention Estimated
=======================================	mu
1. NO VOLATILE ORGANIC COME	· · · · · · · · · · · · · · · · · · ·
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0.5	

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876 Attention: Mr. Michael McGowan Report Date: 9/11/89
Job No.: 5649 - Hov Site E
N.J. Certified Lab No. 12543
QA Batch 1249C

1. 1.

ACID EXTRACTABLES

	CI	ient ID: B405-1	
		86.9% Solid	Detection Limit
<u>Parameter</u>	<u>Units:</u>	ug/kg (Dry Weight	t) <u>Units: ug/kg</u>
2 Chlamanhanal		ND	330
2-Chlorophenol		ND	
2-Nitrophenol		ND	330
Phenol		ND	330
2,4-Dimethylphenol		ND	330
2,4-Dichlorophenol		ND	330
2,4,6-Trichlorophenol		ND	. 330
4-Chloro-3-methylphen	ol	ND	330
2,4-Dinitrophenol		ND	1700
2-Methyl-4,6-dinitrop	henol	ND	1700
Pentachlorophenol		ND	1700
4-Nitrophenol .		ND	1700

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876

Attention: Mr. Michael McGowan

Report Date: 9/11/89

Job No.: 5649 - Hov Site E N.J. Certified Lab No. 12543 ŧ,

QA Batch 1249C

BASE/NEUTRAL EXTRACTABLES

<u>Parameter</u>	86.9% Solid Units: ug/kg (Dry Weight)	Detection Limit <u>Units: ug/kg</u>
<u>FAI AMELEI</u>	Onics. ug/kg (bly weight)	<u> </u>
1,3-Dichlorobenzene	ND	330
1,4-Dichlorobenzene	ND	330
Hexachloroethane	ND	330
Bis(2-chloroethyl) ether	ND	330
1,2-Dichlorobenzene	ND	330
Bis(2-chloroisopropyl) et		330
N-Nitrosodi-n-propylamine		330
Nitrobenzene	ND	330
Hexachlorobutadiene	ND	330
1,2,4-Trichlorobenzene	ND	330
Isophorone	ND	330
Naphthalene ·	ND	330
Bis(2-chloroethoxy) metho	ane ND	330
Hexachlorocyclopentadien		330
2-Chloronaphthalene	ND	330
Acenaphthylene	10Ј	330
Acenaphthene	ND	330
Dimethyl phthalate	ND	330
2,6-Dinitrotoluene	ND	330
Fluorene	ND	330
4-Chlorophenyl phenyl et	her ND	330
2,4-Dinitrotoluene	ND	330
Diethylphthalate	ND	330
N-Nitrosodiphenylamine	ND	330
Hexachlorobenzene	ND	330

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Michael McGowan

Report Date: 9/11/89
Job No.: 5649 - Hov Site E
N.J. Certified Lab No. 12543
QA Batch 1249C

₹.

BASE/NEUTRAL EXTRACTABLES (con't)

<u>Parameter</u>	86.9% Solid Units: ug/kg (Dry Weight)	Detection Limit Units: ug/kg
4-Bromophenyl phenyl ethe	r ND	330
Phenanthrene	110Ј	330
Anthracene	20Ј	330
Dibutyl phthalate	ND	330
Fluoranthene	190Ј	330
Pyrene	150Ј	330
Benzidine	ND	660
Butyl benzyl phthalate	ND	330
Bis(2-ethylhexyl) phthala	te 1800	330
Chrysene	96J	330
Benzo(a)anthracene	85J	330
3,3'-Dichlorobenzidine	ND	. 660
Di-n-octyl phthalate	ND	330
Benzo(b)fluoranthene	160J	330
Benzo(k)fluoranthene	ND	330
Benzo(a)pyrene	93J	330
<pre>Indeno(1,2,3-c,d)pyrene</pre>	63J	330
Dibenzo(a,h)anthracene	20Ј	330
Benzo(ghi)perylene	55J	330
N-Nitrosodimethylamine	ND	330

Client: J.M. SORGE						
Client Sample Identification: B405-1						
Sample No.: 27827 OA Batch No.: 1249 Job	No.: 564	7				
TENTATIVELY IDENTIFIED COMPOUNDS						
Fraction: BUA Concentration U	Fraction: Bula Concentration Units: PPM PPB					
COMPOUND NAME	Retention Time	Estimated Conc.				
1. NO SEMI-VOLATILE ORGANICS FOUND	1 1	ŗ				
2	_					
3						
4	_					
5	-	1				
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7	.					
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20						
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22						
23	1					
24	1	.				
25		KH0V005985				

٠,

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876 Attention: Mr. Michael McGowan

Report Date: 9/11/89

Job No.: 5649 - Hov Site E N.J. Certified Lab No. 12543

QA Batch 1234

ORGANOCHLORINE PESTICIDES and PCBs

	86.9% Solid	Detection Limit
<u>Parameter</u>	Units: ug/kg (Dry Weight)	Units: ug/kg
Aldrin	ND	16
alpha-BHC	ND	16
beta-BHC	ND	16
delta-BHC	ND	16
gamma-BHC (Lindane)	ND	16
Chlordane	ND	160
4,4'-DDD	ND	32
4,4'-DDE	ND	32
4,4'-DDT	ND	32
Dieldrin	ND	32
Endosulfan I	ND	32
Endosulfan II .	ND	32
Endosulfan sulfate	ND.	32
Endrin	ND	32
Endrin aldehyde	ND	32
Heptachlor	ND	16
Heptachlor epoxide	ND	16
Toxaphene	ND	320
PCB-1016	ND	200
PCB-1221	ND	200
PCB-1232 .	ND	200
PCB-1242	ND	200
PCB-1248	ND	200
PCB-1254	ND	200
PCB-1260	ND	200

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876

Somerville, NJ 08876 Attention: Mr. Michael McGowan Report Date: 9/11/89

Job No.: 5649 - Hov Site E N.J. Certified Lab No. 12543

METALS and WET CHEM

Lab No. 27827

<u>Parameter</u>	Client ID: B405-1 86.9% Solid Units: mg/kg (Dry Weight)	Detection Limit <u>Units: mg/kg</u>	Method Code
Antimony Arsenic Beryllium Cadmium Chromium Copper Lead Mercury Nickel Selenium Silver Thallium Zinc	ND ND ND ND 28.9 14 39 ND 22 ND ND ND ND ND ND ND ND ND ND	1.0 1.0 1.0 2.0 5.0 10 0.1 8.0 1.0 2.0 1.0	F F P P P P P P P P P P P P P P P P P P
Cyanide Phenols	ND ND	1.0 5.0	

Method Code: P-ICP, A-Flame AA, F-Furnace AA, CV-Manual Cold Vapor.

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876 Attention: Mr. Michael McGowan

Report Date: 9/11/89
Job No.: 5649 - Hov Site E N.J. Certified Lab No. 12543

QA Batch 1457

PETROLEUM HYDROCARBONS

Envirotech Sample #	Client ID		roleum Hydrocarbons mg/kg (Dry Wt.)
27828	B404-4	90.3	ND
27829	B404-2	84.8	ND

Detection Limit for Petroleum Hydrocarbons is 25 mg/kg.

101

777 New Durham Road Edison, New Jersey 08817 Tel: (201) 549-3900 Fax: (201) 549-3679

September 6, 1989

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876

Attention: Mr. Michael McGowan

Re: Job No. 5621 - Hov Site E

Dear Mr. McGowan:

Enclosed are the results you requested for the following samples taken 8/15 & 17/89 at Hov Site E:

<u>Lab No.</u>	Client ID	Analysis Requested
27647	T143-1 (456)	PHC
27648	T259AC-1 (404)	PHC
27649	T206N (406)	PHC
27650	T134-VL	PHC
27651	T134-WM	PHC
27652	B404-2 Pr	riority Pollutant +40 w/PHC

Please call me at 549-3900 if you have any questions.

Very truly/yours,

Michael J. Urban Laboratory Manager

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876

Attention: Mr. Michael McGowan

Report Date: 9/6/89

Job No.: 5621 - Hov Site E N.J. Certified Lab No. 12543

QA Batch 1454

PETROLEUM HYDROCARBONS

Envirotech Sample #	Client ID	% Solid	Petroleum Hydrocarbons mg/kg (Dry Wt.)
27647	T143-1	89.3	ND
27648	T259AC-1	88.6	42
27649	T206N	88.1	ND
27650	T134-VL	90.3	ND
27651	T134-WM	78.6	ND
27652	B404-2	85.3	1170

Detection Limit for Petroleum Hydrocarbons is 25 mg/kg.

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876 Attention: Mr. Michael McGowan

Report Date: 9/6/89

Job No.: 5621 - Hov Site E N.J. Certified Lab No. 12543 ŧ

QA Batch 1382

VOLATILE ORGANICS

Lab No. 27652 Client ID: B404-2

	CI.	tent II	J: 540	14-2		
		85.3%	Solid	· I	Detection	Limit
Parameter	Units:	ug/kg	(Dry	Weight)	<u> Units:</u>	ug/kg
Benzene		ì	ND.		25	j
Bromodichloromethane		ì	ND		25	
Bromoform		1	ND.		25	5
Bromomethane		ì	ND		50)
Carbon tetrachloride		ì	ND		25	j
Chlorobenzene		1	ND.		25	
Chloroethane		ì	ND		50	
2-Chloroethylvinyl et	cher	1	ND		50)
Chloroform			8.9JE	3	25	
Chloromethane		1	ND		50	
Dibromochloromethane		1	ND		25	
1,1-Dichloroethane]	ND		25	
1,2-Dichloroethane]	ND		. 25	
1,1-Dichloroethene		1	ND		25	
trans-1,2-Dichloroet	hene		ND		25	
1,2-Dichloropropane]	ND		25	
cis-1,3-Dichloroprop	ene]	ND		25	
trans-1,3-Dichloropro]	ND		25	
Ethyl benzene	-	1	ND		25	
Methylene chloride]	ND		25	
1,1,2,2-Tetrachloroe	thane	1	ND		25	
Tetrachloroethene			7.3JI	В	25	
Toluene			ND		25	
1,1,1-Trichloroethan	е		8.2JI	В	25	
1,1,2-Trichloroethan	e		ND		25	
Trichloroethene		•	ND		25	
Trichlorofluorometha	ne		ND		25	
Vinyl chloride			ND ,		50	
Xylenes (Total)			ND		2	5
- '						

Client:	W. Sorge
Client Sample Identification:	B404-2
Sample No.: 27652 QA Batch No	·
TENTATIVELY I	DENTIFIED COMPOUNDS
Fraction: VOC	Concentration Units: PPM PPB
COMPOUND NA	Retention Estimated Time Conc.
1NO VOLATILE ORGANIC CO	MPOUNDS FOUND
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24	KHOV005992
25	

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Michael McGowan

Report Date: 9/6/89
Job No.: 5621 - Hov Site E
N.J. Certified Lab No. 12543
QA Batch 1249

ACID EXTRACTABLES

Lab No. 27652 Client ID: B404-2

	Client ID: B404-2	
	85.3% Solid	Detection Limit
<u>Parameter</u>	Units: ug/kg (Dry Weight)	<u>Units: ug/kg</u>
2-Chlorophenol	ND	1600
2-Nitrophenol	ND	1600
Phenol	ND	1600
2,4-Dimethylphenol	ND	1600
2,4-Dichlorophenol	ND	1600
2,4,6-Trichlorophenol	ND	1600
4-Chloro-3-methylphen		1600
2,4-Dinitrophenol	ND	8300
2-Methyl-4,6-dinitrop	henol ND	8300
Pentachlorophenol	ND	8300
4-Nitrophenol .	ND	8300
-		•

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876 Attention: Mr. Michael McGowan Report Date: 9/6/89

Job No.: 5621 - Hov Site E

N.J. Certified Lab No. 12543

QA Batch 1249

tro-

BASE/NEUTRAL EXTRACTABLES

Lab No. 27652 Client ID: B404-2

	85.3% Solid	Detection Limit
<u>Parameter</u>	Units: ug/kg (Dry Weight)	<u>Units: ug/kg</u>
		1600
1,3-Dichlorobenzene	ND	1600
1,4-Dichlorobenzene	ND	1600
Hexachloroethane	ND	1600
Bis(2-chloroethyl) ether		1600
1,2-Dichlorobenzene	ND	1600
Bis(2-chloroisopropyl) e	ther ND	1600
N-Nitrosodi-n-propylamin	e ND	1600
Nitrobenzene	ND	1600
Hexachlorobutadiene	ND	1600
1,2,4-Trichlorobenzene	ND	1600
Isophorone	ND	1600
Naphthalene ·	200J	1600
Bis(2-chloroethoxy) meth	ane ND	1600
Hexachlorocyclopentadien		1600
2-Chloronaphthalene	ND	1600
Acenaphthylene	750J	1600
Acenaphthene	460J	1600
Dimethyl phthalate	ND	1600
2,6-Dinitrotoluene	ND	1600
Fluorene	5 4 0J	1600
4-Chlorophenyl phenyl et		1600
2,4-Dinitrotoluene	ND	1600
Diethylphthalate	ND	1600
N-Nitrosodiphenylamine	ND	1600
Hexachlorobenzene	ND	1600
		• • • • • • • • • • • • • • • • • • • •

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876 Attention: Mr. Michael McGowan

Pyrene

Di-n-octyl phthalate

Benzo(b)fluoranthene

Benzo(k)fluoranthene

Benzo(ghi)perylene

Indeno(1,2,3-c,d)pyrene

Dibenzo(a,h)anthracene

N-Nitrosodimethylamine

Benzo(a)pyrene

Report Date: 9/6/89 Job No.: 5621 - Hov Site E N.J. Certified Lab No. 12543 QA Batch 1249

BASE/NEUTRAL EXTRACTABLES (con't)

Detection Limit 85.3% Solid Units: ug/kg (Dry Weight) Units: ug/kg Parameter 1600 4-Bromophenyl phenyl ether ND 1600 Phenanthrene 8110 1900 1600 Anthracene 1600 Dibutyl phthalate ND 1600 Fluoranthene 12600 11400 1600 3300 Benzidine ND 1600 Butyl benzyl phthalate 770J 1600 19100 Bis(2-ethylhexyl) phthalate 1600 Chrysene 6820 1600 6470 Benzo(a)anthracene 3,3'-Dichlorobenzidine 3300 ND

ND

ND 6140

2140

1600

750J

ND

11900

Lab No. 27652 Client ID: B404-2

1600

1600

1600

1600

1600

1600

1600

1600

Client: J. H. Songe		
Client Sample Identification: 3404-2		
Sample No.: 27652 QA Batch No.: 1249 Job N	0.: 562	/
TENTATIVELY IDENTIFIED COMPOUNT	DS	
Fraction: BUA Concentration Un	its: PPM	PPB 49
		<i>-</i>
COMPOUND NAME	Retention Time	Estimated Conc.
		=========
1. C15/H12 PAH	28.47	1,200
2u	20 5	1100
3. COELUTING CISHIO/CISHIZ PAH'S	28.81	2,300
- 0	29.45	· _
•	3.49	
6. BENZO [5] NAPHTHO [23-2] FURAN	31.80	1,200
7. <u>C/7-H/2 PAH</u>		1,200
8 u u	· ·	2 100
9. METHYL- PYRENE ISOMER	32.82	1,400
10 4	3.11	
11. 7H-BENZ[de] ANTHRACEN- FONE (ISOMER)	34,14	3,100
12. CNKNOWN	34.40	
13. BENO [6] NAPHTHO [21-6] THIOPHENE (ISOMER)	34.41	1600
14. COELUTING CISHIO / CISHIZ PAH'S	34.58	
15. TH-BENZ [de] ANTHRACEN-7-ENE (1500 FEE)	34.79	1,800
16. BENO[5] NAPHTHO [1,2-0] THIOHENE (KAMER)	34.98	1.600
17 C18 H1Z PAH	35.61	1.880
18. METHYL- BENZ [a] ANTHLACENE ISOMER	36.55	2,100
19. CIGHIY BAH / COELUTING INKNOWN	36.81	1.400
20. C20 H14 PAH	32.201	1. 2001
21. 5.12-NAPHTHACENEDIONE/ CONTINGO	37.50	1,2001
22 PHOSPHORIC ACID (11-DIMENHILETHIL) PHENTL DIPHENTL BYER	37.78	5,300
23 CZO #12 PAH	38.81	3,100 1
24. 10 VAN. M/	39.16	3,100
KHOV005996	200=	<u> </u>

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876

Attention: Mr. Michael McGowan

Report Date: 9/6/89

Job No.: 5621 - Hov Site E N.J. Certified Lab No. 12543

QA Batch 1234

ORGANOCHLORINE PESTICIDES and PCBs

Lab No. 27652 Client ID: B404-2

	CITCHE ID. D404-2	
	85.3% Solid	Detection Limit
<u>Parameter</u>	<pre>Units: ug/kg (Dry Weight)</pre>	<u>Units: ug/kg</u>
		_
Aldrin	ND	16
alpha-BHC	ND	16
beta-BHC	ND	16
delta-BHC	ND	16
gamma-BHC (Lindane)	ND	16
Chlordane	ND	160
4,4'-DDD	ND	32
4,4'-DDE	ND	32
4,4'-DDT	73	32
Dieldrin	122	32
Endosulfan I	ND	32
Endosulfan II .	ND	32
Endosulfan sulfate	ND	32
Endrin	ND	32
Endrin aldehyde	ND	32
Heptachlor -	18	16
Heptachlor epoxide	ND	16
Toxaphene	ND	320
PCB-1016	ND	200
PCB-1221	ND	200
PCB-1232	ND	200
PCB-1242	ND	200
PCB-1248	ND	200
PCB-1254	ND	200
PCB-1260	ND	200

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Michael McGowan

Report Date: 9/6/89

Job No.: 5621 - Hov Site E

N.J. Certified Lab No. 12543

METALS and WET CHEM

Lab No. 27652 Client ID: B404-2

	Client ID: B404-2 85.3% Solid	Detection Limit	wath a dada
<u>Parameter</u>	<pre>Units: mg/kg (Dry Weight)</pre>	Units: mg/kg	Method Code
Antimony Arsenic Beryllium Cadmium Chromium Copper Lead Mercury Nickel Selenium Silver Thallium Zinc	ND 4.7 ND 2.1 21 58.4 273 1.17 59 ND 3.0 ND 332	1.0 1.0 1.0 1.0 10 5.0 10 0.1 8.0 1.0 2.0 1.0 4.0	FFPPPAVPFP
Cyanide Phenols	2.0 ND	1.0 5.0	

Method Code: P-ICP, A-Flame AA, F-Furnace AA, CV-Manual Cold Vapor.

777 New Durham Road Edison, New Jersey 08817 Tel: (908) 549-3900 Fax: (908) 549-3679

CHECKED IN	7/27/92
DATA ENTERED	

July 22, 1992

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876

Attention: Mr. Chris Finley

Re: Job No. B956

Dear Mr. Finley:

Enclosed are the results you requested for the following samples taken 6/23-25/92:

Lab No.	Client ID	Analysis Requested
68855	408-11A	PHC
68856	408-11B	PHC
68857	408-12A	PHC
68858	408-12B	PHC
68859	408-13A	PHC
68860	408-13B	PHC
68861	408-14A	PHC
68862	408-14B	PHC
68863	405-1	PHC
68864	405-2	PHC
68865	405-3	PHC
68866	405-4	BN +15 & PHC
68867	404-2	PHC

Please call me at 549-3900 if you have any questions.

Very truly yours,

Michael J. Urban Laboratory Manager

TABLE OF CONTENTS

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Analytical Methodology Summary

Volatile Organics:

Water samples are analyzed for volatile organics by purge and trap GC/MS as specified in EPA Method 624. Solid samples are analyzed for priority pollutant volatile organics as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8240. Water samples are analyzed for benzene, toluene, ethylbenzene and xylenes (BTEX) by GC-PID as specified in EPA Methods 503.1 and 602. Solid samples are analyzed for BTEX as specified in EPA Method 8020.

Acid and Base/Neutral Extractable Organics:

Water samples are analyzed for acid and/or base/neutral extractable organics by GC/MS in accordance with EPA Method 625. Solids are analyzed for acid and/or base/neutral extractable priority pollutants as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8270.

GC/MS Nontarget Compound Analysis:

Analysis for nontarget compounds is conducted, upon request, in conjunction with GC/MS analyses by EPA Methods 624, 625, 8240 and 8270. Nontarget compound analysis is conducted using a forward library search of the EPA/NIH/NBS mass spectral library of compounds at the greatest apparent concentration (10% or greater of the nearest internal standard) in each organic fraction (15 for volatiles, 15 for base/neutrals and 10 for acid extractables).

Organochlorine Pesticides and PCBs:

Water samples are analyzed for organochlorine pesticides and PCBs by dual column gas chromatography with electron capture detectors as specified in EPA Method 608. Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8080.

Total Petroleum Hydrocarbons:

Water samples are analyzed for petroleum hydrocarbons by I.R. using EPA Method 418.1. Solid samples are prepared for analysis by soxhlet extraction consistent with the March 1990 N.J. DEP "Remedial Investigation Guide" Apendix A, page 52, and analyzed by U.S. EPA Method 418.1.

Metals Analysis:

Metals analyses are performed by any of four techniques specified by a Method Code provided on each data report page, as follows:

- P Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP)
- A Flame Atomic Absorption
- F Furnace Atomic Absorption
- CV Manual Cold Vapor (Mercury)

Water samples are digested and analyzed using EPA methods provided in "Methods for Chemical Analysis of Water and Wastewater" (EPA 600/4-79-020). Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition); samples are digested according to Method 3050 "Acid Digestion of Soil, Sediments and Sludges."

Specific method references for ICP analyses are water Method 200.7 and solid Method 6010. Mercury analyses are conducted by the manual cold vapor technique specified by water Method 245.1 and solid Method 7471. Other specific Atomic Absorption method references are as follows:

		Water	Test Method	Solid	Test Method
Element		Flame	Furnace	<u>Flame</u>	<u>Furnace</u>
Aluminum		202.1	202.2	7020	
Antimony		204.1	204.2	7040	7041
Arsenic			206.2		7060
Barium		208.1		7080	
Beryllium		210.1	210.2	7090	7091
Cadmium		213.1	213.2	7130	7131
Calcium		215.1		7140	
Chromium,	Total	218.1	218.2	7190	7191
Chromium,		218.4	218.5	7197	7195
Cobalt	, ,	219.1	219.2	7200	7201
Copper		220.1	220.2	7210	
Iron		236.1	236.2	7380	
Lead		239.1	239.2	7420	7421
Magnesium		242.1		7450	
Manganese		243.1	243.2	7460	
Nickel		249.1	249.2	7520	
Potassium		258.1		7610	
Selenium			270.2		7740
Silver		272.1	272.2	7760	
Sodium		273.1		7770	
Tin		283.1		7870	
Thallium		279.1			7841
Vanadium		286.1			7911
Zinc		289.1			

Cyanide:

Water samples are analyzed for cyanide using EPA Method 335.2. Cyanide is determined in solid samples as specified in the EPA Contract Laboratory Program IFB dated July 1988, revised February 1989.

Phenols:

Water samples are analyzed for total phenols using EPA Method 420.1. Total phenols are determined in solid samples by preparing the sample as outlined in the EPA, Contract Laboratory Program IFB for cyanide, followed by a phenols determination using EPA Method 420.1.

Cleanup of Semivolatile Extracts:

Upon request Method 3611 Alumina Column Cleanup and/or Mehtod 3650 Acid-Base Partition Cleanup are performed to improve detection limits by the removal of saturated hydrocarbon interferences.

Hazardous Waste Characteristics:

Samples for hazardous waste characteristics are analyzed as specified in the U.S. EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition). Specific method references are as follows:

Ignitability - Method 1020

Corrosivity - Water pH Method 9040 Soil pH Method 9045

Reactivity - Chapter 7, Section 7.3.3 and 7.3.4 respectively for hydrogen cyanide and hydrogen sulfide release.

Toxicity - TCLP Method 1311

Miscellaneous Parameters:

Additional analyses performed on both aqueous and solid samples are in accordance with methods published in the following references:

- Test Methods for Evaluating Solid Wastes, SW-846 3rd Edition, November 1986.
- Standard Methods for the Examination of Water and Wastewater, 17th Edition.
- Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, 1979.

DATA REPORTING QUALIFIERS

- ND The compound was not detected at the indicated concentration.
 - J Mass spectral data indicates the presence of a compound that meets the identification criteria. The result is less than the specified detection limit but greater than zero. The concentration given is an approximate value.
 - B The analyte was found in the laboratory blank as well as the sample. This indicates possible laboratory contamination of the environmental sample.

J.M. Sorge, Inc. 50 County Line Road

Somerville, NJ 08876 Attention: Mr. Chris Finley

Report Date: 7/22/92

Job No.: B956

N.J. Certified Lab No. 12543

QA Batch 2363

PETROLEUM HYDROCARBONS

Envirotech Sample #	Client ID		oleum Hydrocarbons g/kg (Dry Wt.)
68855	408-11A	79.0	ND
68856	408-11B	84.8	50
68857	408-12A	89.0	ИД
68858	408-12B	78.6	170
68859	408-13A	86.8	ND
68860	408-13B	84.3	ND
68861	408-14A	86.8	ND
68862	408-14B	85:6	ND
68863	405-1	88.4	ND
68864	405-2	89.7	ND
68865	405-3	87.6	ND
68866	405-4	82.0	4220
68867	404-2	93.1	315

Detection Limit for Petroleum Hydrocarbons is 25 mg/kg.

Report Date: 7/22/92

Job No.: B956

N.J. Certified Lab No. 12543

QA Batch 1844B

BASE/NEUTRAL EXTRACTABLES

<u>Parameter</u>	Lab No. 68866 Client ID: 405-4 82.0% Solid Units: ug/kg (Dry Weight)	Detection Limit Units: ug/kg
1,3-Dichlorobenzene	ND	6700
1,4-Dichlorobenzene	ND	6700
Hexachloroethane	ND	6700
Bis(2-chloroethyl) ether	ND	6700
1,2-Dichlorobenzene	ND	. 6700
Bis(2-chloroisopropyl) eth	ner ND	6700
N-Nitrosodi-n-propylamine	ND	6700
Nitrobenzene	ND	6700
Hexachlorobutadiene	ND	6700
1,2,4-Trichlorobenzene	ND	6700
Isophorone	ND	6700
Naphthalene	3800J	6700
Bis(2-chloroethoxy) methar	ne ND	6700
Hexachlorocyclopentadiene	ND	6700
2-Chloronaphthalene	ND	6700
Acenaphthylene	ND	6700
Acenaphthene	4100J	6700
Dimethyl phthalate	ND	6700
2,6-Dinitrotoluene	ND	6700
Fluorene	6300J	6700
4-Chlorophenyl phenyl ethe	er ND	6700 .
2,4-Dinitrotoluene	ND	6700
Diethylphthalate	ND	6700
N-Nitrosodiphenylamine	ND	6700
Hexachlorobenzene	ND	6700

Report Date: 7/22/92

Job No.: B956

N.J. Certified Lab No. 12543

QA Batch 1844B

BASE/NEUTRAL EXTRACTABLES (con't)

Lab No. 68866 Client ID: 405-4

	Client ID: 405-4	
	82.0% Solid	Detection Limit
<u>Parameter</u>	Units: ug/kg (Dry Weight)	<u>Units: ug/kg</u>
4-Bromophenyl phenyl ether	nD ND	6700
Phenanthrene	9500	6700
Anthracene	ND	6700
Dibutyl phthalate	ND	6700
Fluoranthene	390 J	6700
Pyrene	1300J	6700
Benzidine	ND	13000
Butyl benzyl phthalate	ND	6700
Bis(2-ethylhexyl) phthala	te ND	6700
Chrysene	200J	6700
Benzo(a)anthracene	ND	6700
3,3'-Dichlorobenzidine	ND	13000
Di-n-octyl phthalate	ND	6700
Benzo(b)fluoranthene	ND	6700
Benzo(k) fluoranthene	ND	6700
Benzo(a)pyrene	ND	6700
Indeno(1,2,3-c,d)pyrene	ND	6700
Dibenzo(a,h)anthracene	ND	6700
Benzo(ghi)perylene	ND	6700
N-Nitrosodimethylamine	ND	6700

TENTATIVELY IDENTIFIED COMPOUNDS

Client Sample Identification: 405-4		·
Sample No.: 68866 Job No.: 8956 Frac	tion: BN	·
Concentration Units: PPM PPB		
COMPOUND NAME	Retention Time	Estimated Conc.
医甲基苯酚 化连连 化聚苯基乙 医异常性 经收益 化甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基		
C12 Hzu alkane	1556	98000
Cia Has Clabore	17.87	140 CCC
2. Da Modera Womer	18.16	66000
	19.27	78 coc
1,	1 4.67	<u> 98000</u>
6. Clementes Raghthalene wome	19.85	6300C
	20.12	<u>81000</u>
7. Cile H34 Clibane	1 20.72	85000
8. C15 H32 alkane	1 21.34	74000
10. tri mother Raphethelene womer coelecting literour	4 72.20	74000
	1 22.91	72000
C. U Has (11) same	23.65	70600
12. CITH36 (Elbane	24.39	54000
	1 24.51	98000
24.26 10,14-detrametris Pentadecare	25.95	60000
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21	-	1
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ENVIROTECH SAMPLE NUMBER 68862 68860 16899 68859 68855 95889 68858 (98%) ENVIROTECH RESEARCH, INC. 777 NEW DURHAM ROAD EDISON, N.J. 08817 (808) 848-3800 ANALYSIS REQUESTED アコレ CHAIN-OF-CUSTODY RECORD SAMPLE LOCATION/DESCRIPTION TMS COC. 100/ 7.5 ረሶ 50,51-17 5'2-2 5 در) درا دم دن 50 . رہ 1 i ١ ŧ ८० 47 17 . - 4 B P 11 - 3ch DC1-804 408-12B 021-804 408:124 408-113 403-114 PROJECT NAME 408 NO. OF CONT. PRES. 31880, 880 2110 FOR REPORT AND BILLING! MATRIX 7103 SMPLD. By STATE ηV 218-0066 Gris Kiley 12451 1350 20170 6001 £201 8121 2121 TIME SMPLD. E411 125 NAME OF CLIENT Sound soperville AT TENTION ADDRESS. DATE SMPLD. zb/hz/9 PHONE CITY

SPECIAL INSTRUCTIONS: EZPA . run BN+ if PHC is over 300 pm	1. RECEIVED BY: 3. RELINQUISHED BY: DATE/TIME 3. RECEIVED BY:	2. RECEIVED BY: DATE/TIME 4. RECEIVED BY:	
EZPA . run	26 JUNE 92	DATE/TIME	
SPECIAL INSTRUCTIONS: _	1. RELINQUISHED BY:	i	

Cires SOO

PHC 15

run: BN+ it

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TOTAL NO. OF CONTAINERS:

(FOR REPORT AND BILLING)	CHAIN-OF-CUSTODY RECORD	2/1
STATE ZIP	ENVIROTECH JOB NO. $\overrightarrow{B} + 56$	ENVIROTECH RESEARCH, INC. 777 NEW DURHAM ROAD EDISON, N.J. 08817
	PROJECT NAME	(908) 549-3900

CITY

ATTENTION

NAME OF CLIENT

ADDRESS

PHONE					PRO	PROJECT NAME		
DATE SMPLD.	TIME SMPLD.	SMPLD. BY	MATRIX	PRES.	NO. OF CONT.	SAMPLE LOCATION/DESCRIPTION	ANALYSIS REQUESTED	ENVIROTECH SAMPLE NUMBER
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<u> </u>	1455					E-50h		68865
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16/52/9						2.404	5HG	2%3
		TOTAL N	TOTAL NO. OF CONTAINERS:	NTAINERS:				

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2. RELINGUISHED BY:	DATE/TIME	2. RECEIVED BY:	4. RELINGUISHED BY:	DATE/TIME	4. RECEIVED BY:

orge		DATE SAMPL	ED	192
50,1		DATE RECEIV	ED6/2	26/92
68855		JOB No	B956	· · · · · · · · · · · · · · · · · · ·
Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
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CLIENT_5	orge		DATE SAMPL	ED 6/	192
MATRIX	Sail		DATE RECEIV	VED6/2	26/92
SAMPLE No	68856		JOB No	B956	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	6/29/92	0	6/30/92	<u> 40</u>	2363
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CLIENT			DATE SAMPL	EDC/ VEDG/2	192
SAMPLE No	6857		JOB No	B956	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time		QA Batch No.
PHC	6/29/92	<u> </u>	6/30/92	40	2363
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	orge Soil		DATE SAMPL	1/2	192 6/92
MATRIX SAMPLE No			JOB No	B956	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	6/29/92	OL	6130/92	<u> </u>	2363
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Analytic Extraction Extractor's Analysis Parameter Date/Time Initials Date/Time Initials Batch N	CLIENT Sorge		DATE SAMPL	ED	192	
SAMPLE No. 6859 Analytic Extraction Extractor's Analysis Analyst's QA Parameter Date/Time Initials Date/Time Initials Batch N PHC 6/29/92 OL 6/3c/92 MO 2363	MATRIX	So'l		DATE RECEI	VED6/2	6/92
Analytic Extraction Extractor's Analysis Analyst's QA Parameter Date/Time Initials Date/Time Initials Batch N PHC 6/29/92 OL 6/3c/92 140 2363	SAMPLE No.	68859			7051	
PHC 6/29/92 OL 6/30/92 MD 2363	Analytic	Extraction		Analysis Date/Time	Analyst's Initials	QA Batch No.
	PHC	6/29/42	<u>OL</u>	6/30/92	MO	2363
						
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CLIENT_Sorge MATRIX_Soil SAMPLE No 69860			DATE SAMPLED 6/26/92 DATE RECEIVED 6/26/92 JOB No. 3956		
PHC	6/29/42	<u>OL</u>	6/20/92	MD	2363
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CLIENT Sorge		DATE SAMPLED 6/92			
MATRIX	5011		DATE RECEIVED 6/26/92		
SAMPLE No	68861		JOB No	B956	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis <u>Date/Time</u>	Analyst's Initials	QA Batch No.
PHC	6/29/92	04	6/30/92	MD	2363
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CLIENT Sorge			DATE SAMPLED 6/26/92		
MATRIX	3011			B956	
SAMPLE No	68805		JOB No	\$ 100	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	6/29/92	06	6/3492	<u>urp</u>	2363
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CLIENT Sorge MATRIX Soil			DATE SAMPLED 6/92 DATE RECEIVED 6/26/92		
			DATE RECEIV	VED	
SAMPLE No	68863		JOB No	P426	·
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis <u>Date/Time</u>	Analyst's <u>Initials</u>	QA Batch No.
PHC	6/29/92	04	6/30/92	<u> MD</u>	2363
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CLIENT Sorge			DATE SAMPLED 6/92 DATE RECEIVED 6/26/92		
SAMPLE No. 69864			JOB No		
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	6/29/4)	04	6/30/92	Mo	2363
					

CLIENT Sorge MATRIX Soil			DATE SAMPLED 6/92 DATE RECEIVED 6/26/92		
SAMPLE No	68865		JOB No	B956	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	0/29/92	<u> </u>	6/30/92	MD	2363
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CLIENT Sorge MATRIX Soil			DATE SAMPLED 6/92 DATE RECEIVED 6/26/92		
SAMPLE No			JOB No	B956	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	6/29/92	<u> </u>	6/30/92	MO	2363
BN+	7-6-12	PN	7/16/92	W	1844
		·			

CLIENT Sorge MATRIX Soil			DATE SAMPLED $\frac{c}{ 92 }$ DATE RECEIVED $\frac{6}{26/92}$		
SAMPLE No	68867		JOB No	B956	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	7/2/92	<u> </u>	7/2/92	Mn	2363
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777 New Durham Road Edison, New Jersey 08817 Tel: (908) 549-3900 Fax: (908) 549-3679

August 13, 1992

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876

Attention: Mr. Chris Finley

Re: Job No. C007 - Hovnanian

Dear Mr. Finley:

Enclosed are the results you requested for the following samples taken 7/6/92 & 7/7/92:

Lab No.	Client ID	Analysis Requested
Lab No. 69127 69128 69129 69130 69131 69132 69133 69134 69135 69136 69137 69138 69139 69140 69141 69142 69143 69144 69145 69146	Client ID 403-1 403-2 403-3 403-4 403-5 403-6 403-7 403-8 403-9 403-10 403-11 403-12 406-1 406-2 406-3 407-1 407-2 407-5 407-6	BN +15 & PHC PHC PHC PHC PHC PHC PHC PHC PHC PHC
69147 69148	407-7 407-8	PHC PHC

Lab No.	Client ID	Analysis Requested			
69149	408-16	VOA +15, BN +15 & PHC			
69150	408-15	VOA +15, BN +15 & PHC			
69151	403-13	PHC			
69152	403-14	PHC			

Please call me at 549-3900 if you have any questions.

Very truly yours,

Michael J. Urban Laboratory Manager

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Analytical Methodology Summary

Volatile Organics:

Water samples are analyzed for volatile organics by purge and trap GC/MS as specified in EPA Method 624. Solid samples are analyzed for priority pollutant volatile organics as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8240. Water samples are analyzed for benzene, toluene, ethylbenzene and xylenes (BTEX) by GC-PID as specified in EPA Methods 503.1 and 602. Solid samples are analyzed for BTEX as specified in EPA Method 8020.

Acid and Base/Neutral Extractable Organics:

Water samples are analyzed for acid and/or base/neutral extractable organics by GC/MS in accordance with EPA Method 625. Solids are analyzed for acid and/or base/neutral extractable priority pollutants as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8270.

GC/MS Nontarget Compound Analysis:

Analysis for nontarget compounds is conducted, upon request, in conjunction with GC/MS analyses by EPA Methods 624, 625, 8240 and 8270. Nontarget compound analysis is conducted using a forward library search of the EPA/NIH/NBS mass spectral library of compounds at the greatest apparent concentration (10% or greater of the nearest internal standard) in each organic fraction (15 for volatiles, 15 for base/neutrals and 10 for acid extractables).

Organochlorine Pesticides and PCBs:

Water samples are analyzed for organochlorine pesticides and PCBs by dual column gas chromatography with electron capture detectors as specified in EPA Method 608. Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8080.

Total Petroleum Hydrocarbons:

Water samples are analyzed for petroleum hydrocarbons by I.R. using EPA Method 418.1. Solid samples are prepared for analysis by soxhlet extraction consistent with the March 1990 N.J. DEP "Remedial Investigation Guide" Apendix A, page 52, and analyzed by U.S. EPA Method 418.1.

Metals Analysis:

Metals analyses are performed by any of four techniques specified by a Method Code provided on each data report page, as follows:

- P Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP)
- A Flame Atomic Absorption
- F Furnace Atomic Absorption
- CV Manual Cold Vapor (Mercury)

Water samples are digested and analyzed using EPA methods provided in "Methods for Chemical Analysis of Water and Wastewater" (EPA 600/4-79-020). Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition); samples are digested according to Method 3050 "Acid Digestion of Soil, Sediments and Sludges."

Specific method references for ICP analyses are water Method 200.7 and solid Method 6010. Mercury analyses are conducted by the manual cold vapor technique specified by water Method 245.1 and solid Method 7471. Other specific Atomic Absorption method references are as follows:

		Water	Test Method	Solid	Test Method
71 -		Flame	Furnace	<u>Flame</u>	Furnace
Element		202.1	202.2	7020	
Aluminum			204.2	7040	7041
Antimony		204.1	206.2		7060
Arsenic		200 1	200.2	7080	
Barium		208.1	210.2	7090	7091
Beryllium		210.1		7130	7131
Cadmium		213.1	213.2	7140	
Calcium		215.1	210 2	7190	7191
Chromium,		218.1	218.2	7190	7195
Chromium,	(+6)	218.4	218.5		2
Cobalt		219.1	219.2	7200	, 1201
Copper		220.1	220.2	7210	
Iron		236.1	236.2	7380	
Lead		239.1	239.2	7420	
Magnesium		242.1		7450	
Manganese		243.1		7460	
Nickel		249.1	_	7520	
Potassium		258.1		7610	
Selenium			270.2		7740
		272.1			
Silver		273.1		7770	
Sodium		283.1	_		
Tin			_		
Thallium		279.1			
Vanadium		286.1			•
Zinc		289.1	289.2	, /33	•

Cyanide:

Water samples are analyzed for cyanide using EPA Method 335.2. Cyanide is determined in solid samples as specified in the EPA Contract Laboratory Program IFB dated July 1988, revised February 1989.

Phenols:

Water samples are analyzed for total phenols using EPA Method 420.1. Total phenols are determined in solid samples by preparing the sample as outlined in the EPA, Contract Laboratory Program IFB for cyanide, followed by a phenols determination using EPA Method 420.1.

Cleanup of Semivolatile Extracts:

Upon request Method 3611 Alumina Column Cleanup and/or Mehtod 3650 Acid-Base Partition Cleanup are performed to improve detection limits by the removal of saturated hydrocarbon interferences.

Hazardous Waste Characteristics:

Samples for hazardous waste characteristics are analyzed as specified in the U.S. EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition). Specific method references are as follows:

Ignitability - Method 1020

Corrosivity - Water pH Method 9040 Soil pH Method 9045

Reactivity - Chapter 7, Section 7.3.3 and 7.3.4 respectively for hydrogen cyanide and hydrogen sulfide release.

Toxicity - TCLP Method 1311

Miscellaneous Parameters:

Additional analyses performed on both aqueous and solid samples are in accordance with methods published in the following references:

- Test Methods for Evaluating Solid Wastes, SW-846 3rd Edition, November 1986.
- Standard Methods for the Examination of Water and Wastewater, 17th Edition.
- Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, 1979.

DATA REPORTING QUALIFIERS

- ND The compound was not detected at the indicated concentration.
- J Mass spectral data indicates the presence of a compound that meets the identification criteria. The result is less than the specified detection limit but greater than zero. The concentration given is an approximate value.
- B The analyte was found in the laboratory blank as well as the sample. This indicates possible laboratory contamination of the environmental sample.

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 2369

PETROLEUM HYDROCARBONS

Envirotech <u>Sample #</u>	<u>Client ID</u>	P€ % Solid	etroleum Hydrocarbon mg/kg (Dry Wt.)	s
69127	403-1	86.9	6940	
69128	403-2	87.8	ND	
69129	403-3	88.4	ND	
69130	403-4	88.1	ND	
69131	403-5	87.9	ND	
69132	403-6	69.2	1610	

Detection Limit for Petroleum Hydrocarbons is 25 mg/kg.

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 2370

PETROLEUM HYDROCARBONS

Envirotech Sample #	Client ID	Pe <u>% Solid</u>	troleum Hydrocarbons mg/kg (Dry Wt.)	5
69134	403-8	84.3	110	
69135	403-9	87.8	ИD	
69136	403-10	86.0	120	
. 69137	403-11	88.2	5110	
69138	403-12	86.6	36	
69139	406-1	89.1	ND	
69140	406-2	87.1	ND	
69141	406-3	89.9	52	
69144	407-4	92.6	ND	
69145	407-5	89.3	ND	
69146	407-6	83.8	130	
69147	407-7	91.5	28	
69148	407-8	90.4	180	
69149	408-16	82.8	29300	
69150	408-15	86.7	1680	
69151	403-13	87.6	ND	
69152	403-14	87.4	ND	

Detection Limit for Petroleum Hydrocarbons is 25 mg/kg.

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1850A

BASE/NEUTRAL EXTRACTABLES

Lab No. 69127 Client ID: 403-1

	86.9% Solid	Detection Limit
<u>Parameter</u>	Units: ug/kg (Dry Weight)	Units: ug/kg
	ND	6700
1,3-Dichlorobenzene		6700
1,4-Dichlorobenzene	ND	6700
Hexachloroethane	ND	6700
Bis(2-chloroethyl) ether	ND	6700
1,2-Dichlorobenzene	ND	6700
Bis(2-chloroisopropyl) et	her ND	
N-Nitrosodi-n-propylamine	ND	6700
Nitrobenzene	ND	6700
Hexachlorobutadiene	ND	6700
1,2,4-Trichlorobenzene	ND	6700
Isophorone	ND	6700
Naphthalene	ND	6700
Bis(2-chloroethoxy) metha	ine ND	6700
Bis(2-chioroethoxy) meend		6700
Hexachlorocyclopentadiene	ND	6700
2-Chloronaphthalene	ND	6700
Acenaphthylene	ND	6700
Acenaphthene	ND	6700
Dimethyl phthalate	ND	6700
2,6-Dinitrotoluene	560J	6700
Fluorene		6700
4-Chlorophenyl phenyl eth	ner ND	6700
2,4-Dinitrotoluene	ND	6700
Diethylphthalate	ND	6700
N-Nitrosodiphenylamine	ND	
Hexachlorobenzene	ND	6700

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1850A

BASE/NEUTRAL EXTRACTABLES (con't)

Lab No. 69127 Client ID: 403-1 Detection Limit 86.9% Solid

	66.9% SUIIU	Decection Himto
<u>Parameter</u>	<pre>Units: ug/kg (Dry Weight)</pre>	<u>Units: ug/kg</u>
4-Bromophenyl phenyl ethe	r ND	6700
Phenanthrene	1300J	6700
Anthracene	ND	6700
Dibutyl phthalate	ND	6700
Fluoranthene	320J	6700
Pyrene	560J ·	6700
Benzidine	ND	13000
Butyl benzyl phthalate	ND	6700
Bis(2-ethylhexyl) phthala		6700
Chrysene	ND	6700
Benzo(a) anthracene	ND	6700
3,3'-Dichlorobenzidine	ND	13000
Di-n-octyl phthalate	ND	6700
Benzo(b) fluoranthene	ND	6700
Benzo(k) fluoranthene	ND	6700
Benzo(a) pyrene	ND	6700
Indeno(1,2,3-c,d)pyrene	ND	6700
Dibenzo(a,h)anthracene	ND	6700
Benzo(ghi)perylene	ND	6700
N-Nitrosodimethylamine	ND	6700

TENTATIVELY IDENTIFIED COMPOUNDS

Client	Sample Identifica	tion: <u>403-1</u>	
Sample	No.: 69127	Job No.: <u>COO7</u>	Fraction: <u>BN</u>

Concentration Units: PPM

	:
(PPB	_

,	COMPOUND NAME	Retention Time	Estimated Conc.

1	Cia Haio alkarie		10,000
2	Cialize alkane		12,000
3	and alkace	18.51	•
4	Circular alkarie		17,000
5	C. 1/2. Oltone		17,000
6	Cin lin Alkane		14,000
7	a alkane		10,000
8			18400
9	Onlly alkane		1/2,000
10	Cao Hya alkane		12,000
11	Cai Hyy alkane		10,000
12	unknown alkane		14,000
13			1 9,200
14	11		14,000
15	- 1	37.19	10,000
16			
17			
18			-
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22			
23			_
24			_
25			_

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876 Attention: Mr. Chris Finley Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 2124

VOLATILE ORGANICS

Lab No. 69132 Client ID: 403-6

	02.	69.2%	Solid	l	Detection Limit
Parameter	<u>Units:</u>	ug/kg	(Dry	Weight)	<u>Units: ug/kg</u>
					5 0
Benzene			ND		5.0
Bromodichloromethane			ND		5.0
Bromoform			ND		5.0
Bromomethane			ND		10
Carbon tetrachloride			ND		5.0
Chlorobenzene			ND		5.0
Chloroethane			ND		10
2-Chloroethylvinyl e	ther		ND		10
Chloroform			ND		5.0
Chloromethane			ND		10
Dibromochloromethane			ND		5.0
1,1-Dichloroethane			ND		5.0
1,2-Dichloroethane			ND		5.0
1,1-Dichloroethene			ND		5.0
trans-1,2-Dichloroet	hene		ND		5.0
1,2-Dichloropropane			ND		5.0
cis-1,3-Dichloroprop			ND		5.0
trans-1,3-Dichloropr	opene		ND		5.0
Ethyl benzene			ND		5.0
Methylene chloride			9.1	В	5.0
1,1,2,2-Tetrachloroe	thane		ND		5.0
Tetrachloroethene			ND		5.0
Toluene			ND		5.0
1,1,1-Trichloroethan	e		210		5.0
1,1,2-Trichloroethan	e		ND		5.0
Trichloroethene			ND		5.0
Trichlorofluorometha	.ne		ND		5.0
Vinyl chloride			ND		10
Xylenes (Total)			ND		5.0

Client Sample Identification: 403-6

TENTATIVELY IDENTIFIED COMPOUNDS

San	mple No.: 69132 Job No.: Coo+ Frac	tion:v	<u> </u>
	Concentration Units: PPM PPB		
	COMPOUND NAME	Retention Time	Conc.
z was di	在二型企业文章名类形式 不存成生命 在在全部的 经经过经济 经共享 化苯甲基苯甲基 经被收益 经收益 化二甲基二甲基二甲基	医双斑掌斑弥革繁雄政 位	
1	NO VOLATILE ORGANICS COMPOUNDS FOUND	<u> </u>	!
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KH0V006037

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1850A

BASE/NEUTRAL EXTRACTABLES

Lab No. 69132 Client ID: 403-6

	CITEUR ID. 403 0	
	69.2% Solid	Detection Limit
Parameter Parameter	Units: ug/kg (Dry Weight)	<u>Units: ug/kg</u>
		17000
1,3-Dichlorobenzene	ND	17000
1,4-Dichlorobenzene	ND	17000
Hexachloroethane	ND	17000
Bis(2-chloroethyl) ether	ND	17000
1,2-Dichlorobenzene	ND	17000
Bis(2-chloroisopropyl) et	her ND	17000
N-Nitrosodi-n-propylamine	ND	17000
Nitrobenzene	ND	17000
Hexachlorobutadiene	ND	17000
1,2,4-Trichlorobenzene	ND	17000
Isophorone	ND	17000
Naphthalene	ND	17000
Bis(2-chloroethoxy) metha	ine ND	17000
Hexachlorocyclopentadiene	ND	17000
2-Chloronaphthalene	ND	17000
Acenaphthylene	ND	17000
Acenaphthene	ND	17000
Dimethyl phthalate	ND	17000
2,6-Dinitrotoluene	ND	17000
Fluorene	ND	17000
4-Chlorophenyl phenyl eth		17000
2 4 Dimit wat aluene	ND	17000
2,4-Dinitrotoluene	ND	17000
Diethylphthalate	ND	17000
N-Nitrosodiphenylamine	ND	17000
Hexachlorobenzene		

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1850A

BASE/NEUTRAL EXTRACTABLES (con't)

<u>Parameter</u>	Lab No. 69132 Client ID: 403-6 69.2% Solid Units: ug/kg (Dry Weight)	Detection Limit <u>Units: ug/kg</u>
4-Bromophenyl phenyl ethe	r ND	17000
Phenanthrene	670J	17000
Anthracene	ND	17000
Dibutyl phthalate	ND	17000
Fluoranthene	1200J	17000
Pyrene	1100 J	17000
Benzidine	ND	33000
Butyl benzyl phthalate	ND	17000
Bis(2-ethylhexyl) phthala	te ND	17000
Chrysene	970J	17000
Benzo(a) anthracene	ND	17000
3,3'-Dichlorobenzidine	ND	33000
Di-n-octyl phthalate	ND	17000
Benzo(b) fluoranthene	780Ј	17000
Benzo(k) fluoranthene	690J	17000
Benzo(a) pyrene	750J	17000
Indeno(1,2,3-c,d)pyrene	590J	17000
Dibenzo(a,h)anthracene	ND	17000
Benzo(ghi)perylene	620J	17000
N-Nitrosodimethylamine	ND	17000

Client Sample Identification: 403-6			
Sample No.: 69132 Job No.: 0007 Fra	ction: BA	<u>/</u>	
Concentration Units: PPM PPB			
COMPOUND NAME	Retention Time	Estimated Conc.	
1. NO SEMI-VOLATILE ORGANICS FOUND]		
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J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876

Attention: Mr. Chris Finley

Report Date: 8/13/92

Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543

QA Batch 2124

VOLATILE ORGANICS

Lab No. 69133 Client ID: 403-7

	01	00 (% 5-1:4	•	Dotootion Timin
_	•• • •	88.6% Solid		Detection Limit
<u>Parameter</u>	Units:	ug/kg (Dry V	weight)	<u>Units: ug/kg</u>
		MD		5 0
Benzene		ND		5.0
Bromodichloromethane		ND		5.0
Bromoform		ND		5.0
Bromomethane		ND		10
Carbon tetrachloride		ND		5.0
Chlorobenzene		ND		5.0
Chloroethane		ND		10
2-Chloroethylvinyl et	ther	ND	•	10
Chloroform		ND		, 5. 0
Chloromethane		ND		10
Dibromochloromethane		ND		5.0
1,1-Dichloroethane		ND		5.0
1,2-Dichloroethane		ND		5.0
1,1-Dichloroethene		ND		5.0
trans-1,2-Dichloroeth	nene	ND		5.0
1,2-Dichloropropane		ND		5.0
cis-1,3-Dichloroprope	ene	ND		5.0
trans-1,3-Dichloropro		ND		5.0
Ethyl benzene	-	ND		5.0
Methylene chloride		3.0J	В	5.0
1,1,2,2-Tetrachloroe	thane	ND		5.0
Tetrachloroethene		ND		5.0
Toluene		ND		5.0
1,1,1-Trichloroethan	e	9.6		5.0
1,1,2-Trichloroethan		ND		5.0
Trichloroethene		ND		5.0
Trichlorofluorometha	ne	ND		5.0
Vinyl chloride		ND		10
Xylenes (Total)		ND		5.0
= \ = /		•••		

Client Sample Identification: 403-7

TENTATIVELY IDENTIFIED COMPOUNDS

Sample No.: 60	7133 Job No.: <u>Coo</u> 7	Fract	10n:VC	<u>C</u>
	Concentration Units: PPM	PPB		
	COMPOUND NAME	R	etention Time	Estimated Conc.
性多性性 医神经神经 经现代证 医甲基甲基甲基				
1. NO VOLATILE	ORGANICS COMPOUNDS FOUND			
2		_		
3		!-		
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		\- 		
17				
18				
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24				l

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1850

ACID EXTRACTABLES

<u>Parameter</u>	Client ID: 403-7 88.6% Solid Units: ug/kg (Dry Weight)	Detection Limit <u>Units: uq/kq</u>
2-Chlorophenol 2-Nitrophenol Phenol 2,4-Dimethylphenol 2,4-Dichlorophenol 2,4,6-Trichlorophenol 4-Chloro-3-methylphenol		3300 3300 3300 3300 3300 3300 17000
2,4-Dinitrophenol 2-Methyl-4,6-dinitrophenol 4-Nitrophenol		17000 17000 17000

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1850

BASE/NEUTRAL EXTRACTABLES

	Lab No. 69133	•
	Client ID: 403-7	
	88.6% Solid	Detection Limit
Parameter	Units: ug/kg (Dry Weight)	<u>Units: ug/kg</u>
<u>Falameter</u>		
1,3-Dichlorobenzene	ND	3300
1,4-Dichlorobenzene	ND	3300
Hexachloroethane	ND	3300
Bis(2-chloroethyl) ether	ND	3300
1,2-Dichlorobenzene	ND	3300
Bis(2-chloroisopropyl) eth	her ND	3300
N-Nitrosodi-n-propylamine	ND	3300
Nitrobenzene	ND	3300
Hexachlorobutadiene	ND	3300
1,2,4-Trichlorobenzene	ИD	3300
	ND	3300
Isophorone	ND	3300
Naphthalene Bis(2-chloroethoxy) methan		3300
Bis(2-chioroethoxy) metha		3300
Hexachlorocyclopentadiene	ND	3300
2-Chloronaphthalene	ND	3300
Acenaphthylene	ND	3300
Acenaphthene	ND	3300
Dimethyl phthalate	ND	3300
2,6-Dinitrotoluene	ND	3300
Fluorene		3300
4-Chlorophenyl phenyl eth	ND	3300
2,4-Dinitrotoluene	ND	3300
Diethylphthalate	ND	3300
N-Nitrosodiphenylamine	ND ND	3300
Hexachlorobenzene	NU	3300

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1850

BASE/NEUTRAL EXTRACTABLES (con't)

	Lab No. 69133	
	Client ID: 403-7	
	88.6% Solid	Detection Limit
<u>Parameter</u>	Units: ug/kg (Dry Weight)	<u>Units: ug/kg</u>
4-Bromophenyl phenyl ethe	er ND	3300
Phenanthrene	660J	3300
Anthracene	140J	3300
Dibutyl phthalate	ND	3300
Fluoranthene	1200J	3300
Pyrene	1300J	3300
Benzidine	ND	6700
Butyl benzyl phthalate	ND	3300
Bis(2-ethylhexyl) phthala		3300
Chrysene	860J	3300
Benzo(a) anthracene	ND	3300
3,3'-Dichlorobenzidine	ND	6700
Di-n-octyl phthalate	ND	3300
Benzo(b) fluoranthene	480J	3300
Benzo(k) fluoranthene	560J	3300
Benzo(a) pyrene	170J	3300
Indeno(1,2,3-c,d)pyrene	370 J	3300
Dibenzo(a,h)anthracene	160J	3300
Dipenzo (ahi) porviene	450J	3300
Benzo(ghi)perylene	ND	3300
N-Nitrosodimethylamine		

Client Sample Identification: 403-7

Sample No.: 69133 Job No.: COO7 Fraction: EN/A

Concentration Units: PPM

PPM (PPI

COM	POUND NAME	Retention Time	Estimated Conc.
			(1500
1. unkin	OWA		4500
2. MAKNOWI	n alkane.	18,13	· - / - -
	· alkane	18.50	'
	OWN		1500
	1 alkane	19.49	1500_1
	ADW.A	19.55	13000_1
	1 alkane		14500_1
01101134	alkane	121.54	
9. <u>117/110</u> Wi	1 alkane	22.23	1,500_1
10		23.02	3400
011-	6 alkane	124.39	2200
11.26	10WM	24.45	12200
	alkane	26,74	1900
	un alkane	29.40	2200
	7		1500
15. <u>UNKAIOLU</u>	stemid		2600
			3,400
17			2200
18. <u>"</u> 19. <u>UNKN</u>	OWN		2600
	n alkane		1900
	70WA		6800
7/	10/0/1/		11500
22		· · · · · · · · · · · · · · · · · · ·	16800
23			2600
24			1
25			_

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1888

ORGANOCHLORINE PESTICIDES and PCBs

Lab No. 69133 Client ID: 403-7 Detection Limit 88.6% Solid Units: uq/kq Units: ug/kg (Dry Weight) <u>Parameter</u> 16 ND Aldrin 16 ND alpha-BHC 16 ND beta-BHC 16 ND delta-BHC 16 ND gamma-BHC (Lindane) 160 ND Chlordane 32 ND 4,4'-DDD 32 ND 4,4'-DDE 32 ND 4,4'-DDT 32 ND Dieldrin 16 Endosulfan I ND 32 ND Endosulfan II 32 ND Endosulfan sulfate 32 ND Endrin 32 ND Endrin aldehyde 16 ND Heptachlor 16 ND Heptachlor epoxide 320 ND Toxaphene 160 ND PCB-1016 160 ND PCB-1221 160 ND PCB-1232 160 ND PCB-1242 160 ND PCB-1248 160 PCB-1254 ND 160 ND PCB-1260

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543

METALS and GENERAL CHEMISTRY

Lab No. 69133 Client ID: 403-7

Parameter Antimony	Client ID: 403-7 88.6% Solid Units: mg/kg (Dry Weight) ND	Detection Limit Units: mg/kg 6.0	Method Code
Arsenic	2.7	0.5	<u>F</u>
Beryllium	ND	0.5	P
Cadmium	ND	0.5	P
Chromium	13.1	1.0	P
Copper	43.3	2.5	F P P P
Lead	428	5.0	
Mercury	0.24	0.1	cň
Nickel	10	4.0	P
Selenium	ND	0.5	F P F P
Silver	ND	1.0	P
Thallium	· ND	5.0	r
Zinc	207	2.0	P
Cyanide Phenols	ND 13.0	1.0 5.0	

Method Code: P-ICP, A-Flame AA, F-Furnace AA, CV-Manual Cold Vapor.

Dimethyl phthalate

2,6-Dinitrotoluene

2,4-Dinitrotoluene

N-Nitrosodiphenylamine

Diethylphthalate

Hexachlorobenzene

4-Chlorophenyl phenyl ether

Fluorene

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1850A

BASE/NEUTRAL EXTRACTABLES

Detection Limit 88.2% Solid Units: ug/kg Units: ug/kg (Dry Weight) Parameter 670 ND 1,3-Dichlorobenzene 670 ND 1,4-Dichlorobenzene 670 ND Hexachloroethane 670 ND Bis(2-chloroethyl) ether 670 ND 1,2-Dichlorobenzene 670 ND Bis(2-chloroisopropyl) ether 670 ND N-Nitrosodi-n-propylamine 670 ND Nitrobenzene 670 ND Hexachlorobutadiene 670 ND 1,2,4-Trichlorobenzene 670 ND Isophorone 670 ND Naphthalene 670 ND Bis(2-chloroethoxy) methane 670 ND Hexachlorocyclopentadiene 670 ND 2-Chloronaphthalene 670 ND Acenaphthylene 670 ND Acenaphthene 670

ND

ND

ND

ND

ND

ND

ND

ND

Lab No. 69137 Client ID: 403-11

670

670

670

670

670

670

670

Benzo(ghi)perylene

N-Nitrosodimethylamine

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
OA Batch 1850A

BASE/NEUTRAL EXTRACTABLES (con't)

Lab No. 69137 Client ID: 403-11 Detection Limit 88.2% Solid Units: uq/kq Units: ug/kg (Dry Weight) Parameter 670 4-Bromophenyl phenyl ether ND 670 130J Phenanthrene 670 36J Anthracene 670 ND Dibutyl phthalate 220J 670 Fluoranthene 670 200J Pyrene 1300 ND Benzidine 670 ND Butyl benzyl phthalate 670 ND Bis(2-ethylhexyl) phthalate 670 140J Chrysene 670 ND Benzo(a) anthracene 1300 ND 3,3'-Dichlorobenzidine 670 Di-n-octyl phthalate ND 110J 670 Benzo(b) fluoranthene 670 94J Benzo(k) fluoranthene 670 120J Benzo(a)pyrene 670 100J Indeno(1,2,3-c,d)pyrene 670 19J Dibenzo(a,h)anthracene

94J

ND

670

670

Client Sample Identification: 403-11

18._____

21._____

TENTATIVELY IDENTIFIED COMPOUNDS

Sample No.: <u>69137</u> Job No.: <u>COO7</u> Fraction: <u>BN</u>			
Concentration Units: PPM PPB			
COMPOUND NAME	Retention Time	Estimated Conc.	
$1. \qquad Unknown$	26.05	380_1	
1	26.25		
2	35.05	•	
3	36.67	450	
5			
6			
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J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876

Attention: Mr. Chris Finley

Report Date: 8/13/92

Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543

QA Batch 2124

VOLATILE ORGANICS

Lab No. 69142 Client ID: 407-1

Parameter Units: ug/kg (Dry Weight) Units: ug/kg		90.5% Solid	Detection Limit
Benzene ND 5.0			
### Bromodichloromethane ND 5.0	<u>Parameter</u>	Units: ud/kd (Dry Weldit)	Unites. ud/kg
### Bromodichloromethane ND 5.0		ND.	5 0
## Stromodict ND 10 10 10 10 10 10 10 1			
Bromomethane			
Carbon tetrachloride ND 5.0 Ghlorobenzene ND 5.0 Chloroethane ND 10 2-Chloroethylvinyl ether ND 10 Chloroform ND 5.0 Chloromethane ND 10 Dibromochloromethane ND 5.0 1,1-Dichloroethane ND 5.0 1,2-Dichloroethane ND 5.0 1,1-Dichloroethene ND 5.0 1,1-Dichloropropane ND 5.0 trans-1,2-Dichloropropene ND 5.0 trans-1,3-Dichloropropene ND 5.0 trans-1,3-Dichloropropene ND 5.0 Ethyl benzene ND 5.0 Methylene chloride 2.6JB 5.0 1,1,2,-Tetrachloroethane ND 5.0 Toluene ND 5.0 1,1,2-Trichloroethane ND 5.0 1,1,2-Trichloroethane ND 5.0 1,1,2-Trichloroethane ND 5.0			
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Methylene chloride 2.6JB 5.0 1,1,2,2-Tetrachloroethane ND 5.0 Tetrachloroethene ND 5.0 Toluene ND 5.0 1,1,1-Trichloroethane ND 5.0 1,1,2-Trichloroethane ND 5.0 Trichloroethene ND 5.0 Trichlorofluoromethane ND 5.0 Vinyl chloride ND 10		ND	5.0
1,1,2,2-Tetrachloroethane ND 5.0 Tetrachloroethene ND 5.0 Toluene ND 5.0 1,1,1-Trichloroethane ND 5.0 1,1,2-Trichloroethane ND 5.0 Trichloroethene ND 5.0 Trichlorofluoromethane ND 5.0 Vinyl chloride ND 10			5.0
Tetrachloroethene ND 5.0 Toluene ND 5.0 1,1,1-Trichloroethane ND 5.0 1,1,2-Trichloroethane ND 5.0 Trichloroethene ND 5.0 Trichlorofluoromethane ND 5.0 Vinyl chloride ND 10	Methylene chiolide		5.0
Toluene ND 5.0 1,1,1-Trichloroethane ND 5.0 1,1,2-Trichloroethane ND 5.0 Trichloroethene ND 5.0 Trichlorofluoromethane ND 5.0 Vinyl chloride ND 10	1,1,2,2-Tetrachioroe		
1,1,1-Trichloroethane ND 5.0 1,1,2-Trichloroethane ND 5.0 Trichloroethene ND 5.0 Trichlorofluoromethane ND 5.0 Vinyl chloride ND 10		-	
1,1,2-Trichloroethane ND 5.0 Trichloroethane ND 5.0 Trichlorofluoromethane ND 5.0 Vinyl chloride ND 10			
Trichloroethane ND 5.0 Trichlorofluoromethane ND 5.0 Vinyl chloride ND 10	1,1,1-Trichioroethan		
Trichlorofluoromethane ND 5.0 Vinyl chloride ND 10			
Vinyl chloride ND 10			
Vinyi Chioride			
Xylenes (Total)			
	Xylenes (Total)	עא	3.0

Client Sample Identification: 40	07-1		
Sample No.: 69142 Job No.:	Coo7 Frac	tion:VC	<u>C</u>
Concentration Uni	ts: PPM PPB		
COMPOUND NAME		Retention Time	Estimated Conc.
	FOIDID CC	· !	
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Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1850

ACID EXTRACTABLES

	Lab No. 69142	
·	Client ID: 407-1	
	90.5% Solid	Detection Limit
<u>Parameter</u>	Units: ug/kg (Dry Weight)	<u>Units: ug/kg</u>
2-Chlorophenol	ND	330
2-Nitrophenol	ND	330
Phenol	ND	330
2,4-Dimethylphenol	ND	330
2.4-Dichlorophenol	ND	330
2,4,6-Trichlorophenol	ND	330
4-Chloro-3-methylphen		330
2,4-Dinitrophenol	ND	1700
2-Methyl-4,6-dinitrop	henol ND	1700
Pentachlorophenol	ND	1700
4-Nitrophenol	ND	1700

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1850

BASE/NEUTRAL EXTRACTABLES

Lab No. 69142 Client ID: 407-1

	CITCHE ID. 40, I	
	90.5% Solid	Detection Limit
<u>Parameter</u>	Units: ug/kg (Dry Weight)	<u>Units: ug/kg</u>
1,3-Dichlorobenzene	ИD	330
1,4-Dichlorobenzene	ND	330
Hexachloroethane	ND	330
Bis(2-chloroethyl) ether	ND	330
1,2-Dichlorobenzene	ND	. 330
Bis(2-chloroisopropyl) et	ther ND	330
N-Nitrosodi-n-propylamine	ND	330
Nitrobenzene	ND	330
Hexachlorobutadiene	ND	330
1,2,4-Trichlorobenzene	ND	330
Isophorone	ИD	330
Naphthalene	ND	330
Bis(2-chloroethoxy) metha	ane ND	330
Hexachlorocyclopentadiene		330
2-Chloronaphthalene	ND	330
Acenaphthylene	ND	330
Acenaphthene	ND	330
Dimethyl phthalate	ND	330
2,6-Dinitrotoluene	ND	330
Fluorene	ND	330
4-Chlorophenyl phenyl eth	ner ND	330
2,4-Dinitrotoluene	ND	330
Diethylphthalate	ND	330
N-Nitrosodiphenylamine	ND	330
Hexachlorobenzene	ND	330

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1850

BASE/NEUTRAL EXTRACTABLES (con't)

	Lab No. 69142	
	Client ID: 407-1	
	90.5% Solid	Detection Limit
Darameter	Units: ug/kg (Dry Weight)	Units: ug/kg
<u>Parameter</u>	0111100. 447744 (327	
4-Bromophenyl phenyl ether	ND	330
Phenanthrene	ND	330
Anthracene	ND	330
Dibutyl phthalate	ND	330
Fluoranthene	22J	330
	21J	330
Pyrene Benzidine	ND	670
	ND	330
Butyl benzyl phthalate		330
Bis(2-ethylhexyl) phthalat	.e	330
Chrysene		330
Benzo(a)anthracene	12J	
3,3'-Dichlorobenzidine	ND	670
Di-n-octyl phthalate	ND ;	330
Benzo(b)fluoranthene	23 J	330
Benzo(k) fluoranthene	ND	330
Benzo(a) pyrene	12J	330
Indeno(1,2,3-c,d)pyrene	ND	330
Dibenzo(a,h) anthracene	ND	330
Benzo(ghi)perylene	ND	330
	ND	330
N-Nitrosodimethylamine	ND	

Client Sample Identification: 407-1	
client Sample Identification.	
Sample No.: $109/42$ Job No.: 007 Fraction: $8N/A$	
Concentration Units: PPM PPB	

	COMPOUND NAME	Retention Time	Conc.
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Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1888

ORGANOCHLORINE PESTICIDES and PCBs

Lab No. 69142 Client ID: 407-1

	Client ID: 40/-1	
	90.5% Solid	Detection Limit
<u>Parameter</u>	Units: ug/kg (Dry Weight)	<u>Units: ug/kg</u>
<u> Lux amo ooz</u>		•
Aldrin	ND	16
alpha-BHC	ND	16
beta-BHC	ND	16
delta-BHC	ND	16
gamma-BHC (Lindane)	ND	16
Chlordane	ND	160
4,4'-DDD	ND	32
4,4'-DDE	ND	32
4,4'-DDT	ND	32
Dieldrin	ND	32
Endosulfan I	ND	16
Endosulfan II	ND	32
Endosulfan sulfate	ND	32
Endrin	ND	32
Endrin aldehyde	ND	32
Heptachlor	ND	16
Heptachlor epoxide	ND	16
Toxaphene	ND	320
PCB-1016	ND	160
PCB-1221	ND	160
PCB-1232	ND	160
PCB-1242	ND	160
PCB-1248	ND	160
PCB-1254	ND	160
PCB-1260	ND	160

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543

METALS and GENERAL CHEMISTRY

Lab No. 69142

<u>Parameter</u>	Client ID: 407-1 90.5% Solid <u>Units: mg/kg (Dry Weight)</u>	Detection Limit <u>Units: mg/kg</u>	Method Code
Antimony Arsenic Beryllium Cadmium Chromium Copper Lead Mercury Nickel Selenium Silver Thallium Zinc	ND 1.1 ND ND 8.8 35.9 40 ND 8.7 ND ND ND ND ND	6.0 0.5 0.5 1.0 2.5 5.0 0.1 4.0 0.5 1.0 2.5	P F P P P P P P F P F P
Cyanide Phenols	ND ND	1.0 5.0	

Method Code: P-ICP, A-Flame AA, F-Furnace AA, CV-Manual Cold Vapor.

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 2124

VOLATILE ORGANICS

Lab	No.	69143
Client	ID:	407-2

	Client ID: 407-2	
	90.0% Solid	Detection Limit
Parameter	Units: ug/kg (Dry Weight)	<u>Units: ug/kg</u>
Benzene	ND	5.0
Bromodichloromethane	ND	5.0
Bromoform	ND	5.0
Bromomethane	ND	10
Carbon tetrachloride	ND	5.0
Chlorobenzene	ND	5.0
Chloroethane	ND	. 10
2-Chloroethylvinyl et	ther ND	10
Chloroform	ND	5.0
Chloromethane	ND	10
Dibromochloromethane	ND	5.0
1,1-Dichloroethane	ND	5.0
1,2-Dichloroethane	ND	5.0
1,1-Dichloroethene	ND	5.0
trans-1,2-Dichloroeth	nene ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloroprope	ene ND	5.0
trans-1,3-Dichloropro	opene ND	5.0
Ethyl benzene	ND	5.0
Methylene chloride	1.9JB	5.0
1,1,2,2-Tetrachloroet	thane ND	5.0
Tetrachloroethene	ИD	5.0
Toluene	ND	5.0
1,1,1-Trichloroethane		5.0
1,1,2-Trichloroethane	e ND	5.0
Trichloroethene	- ND	5.0
Trichlorofluoromethan	ne ND	5.0
Vinyl chloride	ND	10
Xylenes (Total)	ND	5.0

Client Sample Identification: 407-2		
Sample No.: 69143 Job No.: C007 Fr	action: V	oc
Concentration Units: PPM PP	•	
COMPOUND NAME	Retention Time	Estimated Conc.
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1. NO VOLATILE ORGANICS COMPOUNDS FOUND	_	
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Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1850

ACID EXTRACTABLES

<u>Parameter</u>	Lab No. 69143 Client ID: 407-2 90.0% Solid Units: ug/kg (Dry Weight)	Detection Limit <u>Units: ug/kg</u>
2-Chlorophenol	ND	330
2-Nitrophenol	ND	330
Phėnol	, ND	330
2.4-Dimethylphenol	ND	330
2.4-Dichlorophenol	ND	330
2,4,6-Trichlorophenol		330
4-Chloro-3-methylphen		330
2.4-Dinitrophenol	ND	1700
2-Methyl-4,6-dinitrop		1700
Pentachlorophenol	ND	1700
4-Nitrophenol	ND	1700

4-Chlorophenyl phenyl ether

2,4-Dinitrotoluene

N-Nitrosodiphenylamine

Diethylphthalate

Hexachlorobenzene

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876 Attention: Mr. Chris Finley Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1850

BASE/NEUTRAL EXTRACTABLES

Lab No. 69143

ND

ND

ND

ND

ND

Client ID: 407-2 Detection Limit 90.0% Solid Units: ug/kg (Dry Weight) Units: uq/kq Parameter 330 ND 1,3-Dichlorobenzene 330 ND 1,4-Dichlorobenzene 330 ND Hexachloroethane 330 ND Bis(2-chloroethyl) ether 330 ND 1,2-Dichlorobenzene 330 ND Bis(2-chloroisopropyl) ether 330 ND N-Nitrosodi-n-propylamine 330 ND Nitrobenzene 330 ND Hexachlorobutadiene 330 1,2,4-Trichlorobenzene ND 330 ND Isophorone 330 ND Naphthalene 330 ND Bis(2-chloroethoxy) methane 330 ND Hexachlorocyclopentadiene 330 ND 2-Chloronaphthalene 330 ND Acenaphthylene 330 ND Acenaphthene 330 ND Dimethyl phthalate 330 ND 2,6-Dinitrotoluene 330 ND Fluorene 330

330

330

330

330

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1850

BASE/NEUTRAL EXTRACTABLES (con't)

<u>Parameter</u>	Lab No. 69143 Client ID: 407-2 90.0% Solid Units: ug/kg (Dry Weight)	Detection Limit Units: ug/kg
4-Bromophenyl phenyl ethe	r ND	330
Phenanthrene	8.5J	330
Anthracene	ND	330
Dibutyl phthalate	ND	330
Fluoranthene	14Ј	330
Pyrene	13Ј	330
Benzidine	ND	670
Butyl benzyl phthalate	ND	330
Bis(2-ethylhexyl) phthala	ite ND	330
Chrysene	9.8J	330
Benzo(a) anthracene	ND	330
3,3'-Dichlorobenzidine	ND	670
Di-n-octyl phthalate	ND	330
Benzo(b) fluoranthene	14 J	330
Benzo(k) fluoranthene	ND	330
Benzo(a) pyrene	6.6J	330
Indeno(1,2,3-c,d)pyrene	ND	330
Dibenzo(a,h)anthracene	ND	330
Benzo(ghi)perylene	ND	330
N-Nitrosodimethylamine	ND	330

Client Sample Identification: 407-2			
Sample No.: 69143	Job No.: <u>COO7</u>	Fraction: BN/A	

PPB

PPM

Concentration Units:

COMPOUND NAME	Retention Time	Estimated Conc.
1. NO SEMI-VOLATILE ORGANICS FOUND (
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PCB-1221

PCB-1232

PCB-1242

PCB-1248

PCB-1254

PCB-1260

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1888

ORGANOCHLORINE PESTICIDES and PCBs

Lab No. 69143 Client ID: 407-2

Detection Limit 90.0% Solid Units: ug/kg Units: ug/kg (Dry Weight) Parameter ND 16 Aldrin 16 ND alpha-BHC ND 16 beta-BHC 16 ND delta-BHC ND 16 gamma-BHC (Lindane) ND 160 Chlordane 32 ND 4,4'-DDD 32 ND 4,4'-DDE 32 ND 4,4'-DDT 32 ND Dieldrin 16 Endosulfan I ND Endosulfan II ND 32 32 ND Endosulfan sulfate 32 ND Endrin 32 ND Endrin aldehyde 16 Heptachlor ND 16 ИD Heptachlor epoxide 320 ND Toxaphene 160 ND PCB-1016

ND

ND

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ND

160

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Report Date: 8/13/92

Job No.: C007 - Hovnanian

N. J. Cortified Lab No. 1254

N.J. Certified Lab No. 12543

METALS and GENERAL CHEMISTRY

Lab No. 69143

<u>Parameter</u>	Client ID: 407-2 90.0% Solid Units: mg/kg (Dry Weight)	Detection Limit <u>Units: mg/kg</u>	Method Code
Antimony Arsenic Beryllium Cadmium Chromium Copper Lead Mercury Nickel Selenium Silver Thallium Zinc	1.2 ND ND 6.3 30.4 8.5 ND 6.5 ND ND ND ND ND	6.0 0.5 0.5 1.0 2.5 5.0 0.1 4.0 0.5 1.0 0.5 2.0	PFPPPPPFPFP
Cyanide Phenols	ND ND	1.0 5.0	

Method Code: P-ICP, A-Flame AA, F-Furnace AA, CV-Manual Cold Vapor.

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 2124D

VOLATILE ORGANICS

	Lab No. 69149	
	Client ID: 408-16	
	82.8% Solid	Detection Limit
Parame <u>ter</u>	Units: ug/kg (Dry Weight)	<u>Units: ug/kg</u>
rarameter		
Benzene	ND	5.0
Bromodichloromethane	ИD	5.0
Bromoform	ND	5.0
Bromomethane	ND	10
Carbon tetrachloride	ND	5.0
Chlorobenzene	ND	5.0
Chloroethane	ND	10
2-Chloroethylvinyl e	ther ND	10
Chloroform	ND	5.0
Chloromethane	ND	10
Dibromochloromethane	ND	5.0
1,1-Dichloroethane	ND	5.0
1,2-Dichloroethane	ND	5.0
1,1-Dichloroethene	ND	5.0
trans-1,2-Dichloroet	hene ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloroprop	ene ND	5.0
trans-1,3-Dichloropr	opene ND	5.0
Ethyl benzene	ND	5.0
Methylene chloride	17JB	5.0
1,1,2,2-Tetrachloroe	thane ND	5.0
Tetrachloroethene	ND	5.0
Toluene	ND	5.0
1,1,1-Trichloroethan	e ND	5.0
1,1,2-Trichloroethan	ne ND	5.0
Trichloroethene	ND	5.0
Trichlorofluorometha	ine ND	5.0
Vinyl chloride	ND	10
Xylenes (Total)	ND	5.0
Witeries (Iocal)		

Client	Sample Identification: H08-16		
Sample	No.: 69149 Job No.: 6007	Fraction: V	CC
	Concentration Units: PPM	(PPB)	

	COMPOUND NAME	Retention Time	Estimated Conc.
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2	Mulmethillicheheanne isamer	26.31	110
4.	unknown	27.79	220
5.	Cattle hudricarbanko-elutina Cattis	28.53	220
6.	Cotto hydricarbon hydricarbon	30.05	440
7	CICHS	130.57	150
		31.49	160
٥٠_	De catydrinaphthaieire	133.34	48U
10	(2-methy propy) cyclonixum	,	860
	INKNOWN	52.63	240
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Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1848M-B

BASE/NEUTRAL EXTRACTABLES

Lab No. 69149 Client ID: 408-16 Detection Limit 82.8% Solid Units: uq/kq Units: ug/kg (Dry Weight) Parameter 3300 ND 1,3-Dichlorobenzene 3300 ND 1,4-Dichlorobenzene 3300 ND Hexachloroethane 3300 ND Bis(2-chloroethyl) ether 3300 ND 1,2-Dichlorobenzene 3300 ND Bis(2-chloroisopropyl) ether 3300 ИD N-Nitrosodi-n-propylamine 3300 ND Nitrobenzene 3300 ND Hexachlorobutadiene 3300 ND 1,2,4-Trichlorobenzene 3300 ND Isophorone ND 3300 Naphthalene 3300 Bis(2-chloroethoxy) methane ND 3300 ND Hexachlorocyclopentadiene 3300 2-Chloronaphthalene ND 3300 ND Acenaphthylene 3300 ND Acenaphthene 3300 ND Dimethyl phthalate 3300 ND 2,6-Dinitrotoluene 3300 ND Fluorene 3300 ND 4-Chlorophenyl phenyl ether ND 3300 2,4-Dinitrotoluene 3300 Diethylphthalate ND ND 3300 N-Nitrosodiphenylamine ND 3300 Hexachlorobenzene

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1848M-B

BASE/NEUTRAL EXTRACTABLES (con't)

<u>Parameter</u>	Lab No. 69149 Client ID: 408-16 82.8% Solid Units: ug/kg (Dry Weight)	Detection Limit <u>Units: ug/kg</u>
4-Bromophenyl phenyl ether	ND	3300
Phenanthrene	ND	3300
Anthracene	ND	3300
Dibutyl phthalate	ND	3300
Fluoranthene	ND	3300
Pyrene	ND	3300
Benzidine	ND	6700
Butyl benzyl phthalate	ND	3300
Bis(2-ethylhexyl) phthala	te ND	3300
Chrysene	ND	3300
Benzo(a) anthracene	ND	3300
3,3'-Dichlorobenzidine	ND	6700
Di-n-octyl phthalate	ND	3300
Benzo(b) fluoranthene	1000Ј	3300
Benzo(k) fluoranthene	ND	3300
Benzo(a) pyrene	ND	3300
Indeno(1,2,3-c,d)pyrene	ND	3300
Dibenzo(a,h)anthracene	ND	3300
Benzo(ghi)perylene	ND	3300
N-Nitrosodimethylamine	ND	3300

Client Sample Identification: 408-16	
Client Sample Identification: 7000	Fraction: RN
Sample No.: 69149 Job No.: COO7	Fraction:
Concentration Units: PPM	PPB

	COMPOUND NAME	Retention Time	Estimated Conc.
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Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 2124D

VOLATILE ORGANICS

Lab No. 69150

	Client ID: 408-15	
•	86.7% Solid	Detection Limit
Parameter	Units: ug/kg (Dry Weight)	<u>Units: ug/kg</u>
Benzene	ND	10
Bromodichloromethane	ND	10
Bromoform	ND	10
Bromomethane	ND	20
Carbon tetrachloride	ND	10
Chlorobenzene	ND	10
Chloroethane	ND	20
2-Chloroethylvinyl et	ther ND	20
Chloroform	ND	10
Chloromethane	ND	20
Dibromochloromethane	ND	10
1,1-Dichloroethane	ND	10
1,2-Dichloroethane	ND	10
1,1-Dichloroethene	ND	10
trans-1,2-Dichloroet	hene ND	10
1,2-Dichloropropane	ND	10
cis-1,3-Dichloroprop	ene ND	10
trans-1,3-Dichloropr	opene ND	10
Ethyl benzene	ND	10
Methylene chloride	6.8JB	10
1,1,2,2-Tetrachloroe	thane ND	10
Tetrachloroethene	ND	10
Toluene	ND	10
1,1,1-Trichloroethan	e ND	10
1,1,2-Trichloroethan		10
Trichloroethene	ND	10
Trichlorofluorometha	ne ND	10
Vinyl chloride	ND	20
Xylenes (Total)	ИD	10
∡ = ,		

Client Sample Identification: 408-15			
Sample No.: 69150 Job No.: 6007 Fraction: VOC			
Concentration Units: PPM (PPB)			
COMPOUND NAME	Retention Time	Estimated Conc.	
1. 1,1,3-trimethylogolohexane	25.03	<i>3</i> /	
1 •	26.32	32	
3 unknown	28.61	5-3	
J	30.06	110	
5. unkneum	31.53	40	
6	33.01	340	
7 - 4	37.93	310	
9 • 71 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	39.71	210	
9. Ethyldimethylbengene isomer/cuelliting	55.87	687	
10. unknown			
11			
12	<u> </u>		
13	l		
14			
15	l	l	
16	l	l	
17	<u> </u>	l	
18	I		
19	<u> </u>	1	
20	·		
21	l <u></u>		
22	.		
23		l	
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Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1850A

BASE/NEUTRAL EXTRACTABLES

Lab No.	69150
Client ID	: 408-15
86.7%	Solid

	86.7% Solid	Detection Limit
<u>Parameter</u>	Units: ug/kg (Dry Weight)	<u>Units: ug/kg</u>
-		
1,3-Dichlorobenzene	ND	3300
1,4-Dichlorobenzene	ND	3300
Hexachloroethane	ИD	3300
Bis(2-chloroethyl) ether	ИD	3300
1,2-Dichlorobenzene	ND	3300
Bis(2-chloroisopropyl) eth	er ND	3300
N-Nitrosodi-n-propylamine	ND	3300
Nitrobenzene	ND	3300
Hexachlorobutadiene	ND	3300
1,2,4-Trichlorobenzene	ND	3300
Isophorone	ND	3300
Naphthalene	74 J	3300
Bis(2-chloroethoxy) methan	ne ND	3300
Hexachlorocyclopentadiene	ND	3300
2-Chloronaphthalene	ND	3300
Acenaphthylene	80J	3300
Acenaphthene	180Ј	3300
Dimethyl phthalate	ND	3300
2,6-Dinitrotoluene	ND	3300
Fluorene	190Ј	3300
4-Chlorophenyl phenyl ethe	er ND	3300
2,4-Dinitrotoluene	ND	3300
Diethylphthalate	ND	3300
N-Nitrosodiphenylamine	ND	3300
Hexachlorobenzene	ND	3300

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876 Attention: Mr. Chris Finley

Benzo(a)pyrene

Indeno(1,2,3-c,d)pyrene

Dibenzo(a,h)anthracene

N-Nitrosodimethylamine

Benzo(ghi)perylene

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1850A

BASE/NEUTRAL EXTRACTABLES (con't)

Lab No. 69150

560J

400J

85J

400J

ND

Client ID: 408-15 Detection Limit 86.7% Solid Units: ug/kg Units: ug/kg (Dry Weight) <u>Parameter</u> 3300 ND 4-Bromophenyl phenyl ether 3300 1100J Phenanthrene 240J 3300 Anthracene 3300 ND Dibutyl phthalate 3300 1600J Fluoranthene 3300 1600J Pyrene 6700 ND Benzidine 3300 ND Butyl benzyl phthalate 3300 ND Bis(2-ethylhexyl) phthalate 3300 850J Chrysene 3300 630J Benzo(a) anthracene 6700 3,3'-Dichlorobenzidine ND 3300 ND Di-n-octyl phthalate 570J 3300 Benzo(b) fluoranthene 3300 480J Benzo(k)fluoranthene

3300

3300

3300

3300

3300

TENTATIVELY IDENTIFIED COMPOUNDS

Client	Sample Identificat	tion: 408-15	
Sample	No.: 69150	Job No.: <u>COO7</u>	Fraction: BN

Concentration Units: PPM

PPB)
(FFD	/

COMPOUND NAME	Retention Time	Estimated Conc.
1 INNIONI CITATION		1500
2	13.63	1,500
2	1_15.29	4200
2-butyl-1,1,3-trimethyl-Cyclohexane	15.45	1,500
5. unknown alkane	1_16.34	2,100
6	1_17.11_1	2,300
7	1_18.09	
l(2,300
i in Knoi i i	20.82	
10. unknown alkane	122.20	2300_
11	20.98	<u> </u>
12	124.35	, ——
13	13350	·
14	1 36.15	11900-1
15. UNKNOWN	1 37.79	1_2,700_1
16	.	
17	.	
18	_	.
19	_	.
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22	_	.
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25	_	

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PROJEC	PROJECT NAME: Hounay : on	Hovna	اري. ام	PRO PRO	PROJECT No.: 92050	0:		וו מ	JN JUNCE INC
COLLEC	COLLECTED BY: .			SIGN	SIGNATURE: CARRY How	The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s			not, me.
				CHAIN	CLIAIN OF CUSTODY RECORD	RECORD		C.O.C. No.: 1574	1839
SPL.	DATE SPLD.	IIME SPLD.	SAI SAMPLIN	SAMPLING POINT AND SAMPLING METHOD DESCRIPTION		SAMPLE. MATERIAL	ANALYSIS	SIS	REMARKS
1- 604	76/9/E		tert pit i 3.	0-3.5	<u> </u>	!	ひまひ	69/27	DRUMERABLES
7-504	26/6/2	143					PHC	6917 8	DHA C
403-3		6411					DHC -		Jes Songpar
4-604		1/50					2H4C		ran 810+
403-5		121				:	PHC	65 131	
9-204	>	25/1	>			>	28169 SI+ON/ 7Hd	564132	
RELINQUISHED BY	SHED BY	ONO	ORGANIZATION	DATE / TIME	RECEIVED BY	NO N	ORGANIZA 110N	DATE / TIME	AE REMARKS
Mary	Chanp Hfor	27	The sark	26/12/6	D.V. La	£ > 5	ENUWOKEL	1/4/c 8:30	5-3
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COLLECTED BY: SPI. DATE TIME No. SPI.D. SPI.D.							
DATE	Montan	PRO.	PROJECT No.: 92050 SIGNATURE: Ubery Johan	o lefo		S MC	JM SORCE, INC.
DATE		CHAIN C	CLIAIN OF CUSTODY RECORD	RECORU		C.O.C. No.: 1574	1534
		SAMPLING POINT AND SAMPLING METHOD DESCRIPTION		SAMPI E. Material	SISATANA		REMARKS
1461 26/6/2 6-804	- P	40.2.5.		7105	04+dd	69133	DELLVERABLES
7251 8-804	1 100 17.04	₩ 0.1-2.5			PHC		if PHC
6251 6-604		s			PHC	65/33	result 15 greater than
423-10 OI-ECH	test pit:	7.5-4.0 ft			PHC		Soopph,
1251 11-604	C	3			アドム	12137	8 Ω+
8251 A 1528	82	٤		>	pHc 6	88169	
RELINQUISHED BY	ORGANIZATION	DATE / TIME	RECEIVED BY		ORGANIZATION	DATE / TIME	IE REMARKS
down Afra	The Sorge	26/206	D/Ju-(re	15/3)	Emiro tech	C5.8 25/5/L	6.
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C.O.C. #: .

PROJECT NAME: However, PROJECT NO. 37050 JM SOLICE, INC. COLLECTED BY: SCHANURE: About 14/4 COLLAIN OF CUSTODY RECORD CO.C. No. 1574 M.C. SAMPHE SAMPHE COLLAIN OF CUSTODY RECORD CO.C. No. 1574 M.C. SAMPHE SAMPHE COLLAIN OF CUSTOD BESCRIPTION MATERIAL PP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/19 FP4C C9/		 -							
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IIME SAMPI ING DINI AND SAMPI E ANALYSIS				CHAIN (OF CUSTODY IN	ECORD		C.O.C. No.:	hesi
1373	ATE 200	TIME SPLD.	SAN SAMPLING	APLING POINT AN	NOIL	AMPLE. VTERIAL	ANAL	rSIS	REMARKS
1345 Latpit: 3.5-4.0' 1500 Lestpit: 3.5-4.0' 1517 Lestpit: 3.5-4.0' 1610 DAIE / IIME RECEIVED BY ORGANIZATION DAIE / IIM ORGANIZATION DAIE / IIME RECEIVED BY ORGANIZATION DAIE / IIM	26/16		testpit i 4.	· · · · · · · · · · · · · · · · · · ·		710	PHC	69 139	DELIVERABLES
1337 421 7.5-4.0' 1440 5141 1440 500 1440 65142 1440 500 1440 65142 1440 500 1440 65142 1440 500 1440 500 1440 65142 1440 500 1440 65143 1440 1440 65142 1440 1440 65142 1440 1440 65142 1440 1440 65142 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1440 65143 1	•	342	Ì	s-4.0'			5Hd	٥٨/69	2ha fi
ORGANIZATION DATE / TIME RECEIVED BY ORGANIZATION DATE / TIME ORGANIZATION DATE / TIME RECEIVED BY ORGANIZATION DATE / TIME 8 3.9	s	1500		2-4.0.			PHC	15159	greater than
ORGANIZATION DATE / TIME RECEIVED BY ORGANIZATION DATE / TIME $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$				5-1.0			04+44	26/57	Soo per,
ORGANIZATION DATE / TIME RECEIVED BY ORGANIZATION DATE / TIME The same of July 42 and a same and a same and a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a same a sam	2	1440		5-4.0				69 143	408
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C.O.C. #:

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PROJEC	PROJECT NAME: HOWANAN	Hornac	ንዉሳ	PRC -	PROJECT No.: 92050	020				
COLLEC	COLLECTED BY:			SIG	SIGNATURE: Asbeet Jeffer	of the			JM SOIKEE, INC.	INC.
				CLIAIN	CLIAIN OF CUSTODY RECORD	Y RECORD		C.O.C. No.: 1574	7551	
SPI.	DATE SPLD.	SPLD.	SAMPLING ME	SAMPLING POINT AND LING METLIGD DESCRIPTION	ED RION	SAMINE MATERIAL	AIV	AHAL YSIS	REMARKS	KS
4-604	24/0/2	0 Ce1	ted pit: 8.	Hr. 8 - 0		7105	PHC	75/57	ECRA FILIVEDADI P	N E
5-604		1601	jó a	tf 2:2 - 0:3			PHC	69.145	if PHC	
9-604		125		S. 6 - 6.5			2Hd	75/57	greater the	han
t-tot		9251	.	5.0 - 5.5 }			PHC		plante my	5 8
403-8	>	0141	**************************************	5.0-5.5 F		: >	PHC	35169	404	
RELINQUISHED BY	IED BY	9¥0	ORGANIZATION	DATE / TIME	RECEIVED BY		ORGANIZATION	DAIE / IIME		REMARKS
sport Affect	3	E	The Sorge	26/206	Dilu (ca	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	E wwwtell	2/3 15/6/		
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								Jog	C007	-
PROJE	PROJECT NAME: Homanian	Haman	ומי	PRO	PROJECT No.: 92050	250	:	וא מ	i Jour	IAIC
COLLE	COLLECTED BY:			SIGN	SIGNATURE: Bobard Jeffer	of lefter		JC W	JM SUIGE, INC.	INC.
				CIIAIN (CITAIN OF CUSTODY RECORD	RECORD		C.O.C. No.: 1574	1574	
SP1.	DATE SPLD.	SPLD.	SAMPLING SAMPLING METI	SAMPLING POINT AND LING METHOD DESCRIPTION	NOII dli	SAMPLE MATERIAL	ANALYSIS	SIS	REMARKS	RKS
21-804	26/2/2	0801	ter pi : 5.0-5.5			7105	P4C/10+	56167	ECRA DELIVERABLES	ADD FS
408-18	2/2/2	950	6	4.0-9.5			PNC/VO+)paj.	
403-13	26/8/4	600	test pit: 3.0-3.5 ft	#5.6-0		: 	PHC	1-5/6/	result grant	4
40-604	26/8/2 41-604	106		Jor-2.5			PHC	63157		
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RELINQUISHED BY	SHED BY	X O	ORGANIZABON	DATE / TIME	RECEIVED BY		URGANIZA IION	DAIE / IIME	-	REMARKS
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ENVIROTECH RESEARCH, INC.

777 NEW DURHAM ROAD, EDISON, NJ 08817 (908) 549-3900

Sorge DATE SAMPLED_ CLIENT_ DATE RECEIVED_ 501 MATRIX_ C007 JOB No._ SAMPLE No._ QA Analyst's Analysis Extractor's Extraction Analytic Batch No. Initials Initials Date/Time <u>Parameter</u> MI 7/9/92

ENVIROTECH RESEARCH, INC.

777 NEW DURHAM ROAD, EDISON, NJ 08817 (908) 549-3900

Sorge DATE SAMPLED_ CLIENT DATE RECEIVED_ 501 MATRIX_ C007 69128 JOB No.__ SAMPLE No._ QA Analyst's Analysis Extractor's Extraction Analytic Initials Batch No. Date/Time Initials Date/Time Parameter 2369 7/10/92 MO 7/9/92

CLIENT	Sorge		DATE SAMPL	ED 7/1/	92
	501		DATE RECEIV	ED_7/9/	92
SAMPLE No	69129		JOB No	C007	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Date/Time_	Analyst's Initials	QA Batch No.
PHC	7/9/92	<u> </u>	7/10/92	<u> </u>	2369
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CLIENT			DATE SAMPL	- / 0	192 <u> </u>
MATRIX	501		DATE RECEI		176
SAMPLE No	69130		JOB No		
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis <u>Date/Time</u>	Analyst's Initials	QA Batch No.
PHC	7/9/92	DL	7/10/92	MD	2369
					
			_		· ·
					
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			_	·	-
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CLIENT	Sorge		DATE SAMPL	ED 7/7	192
MATRIX	501		DATE RECEIV		192
SAMPLE No	69131		JOB No	C007	
Analytic Parameter	Extraction Date/Time	Extractor's <u>Initials</u>	Analysis Date/Time		QA Batch No.
PHC	7/9/92	<u> </u>	7/16/92	<u>MD</u>	2369
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CLIENT	Sorge		DATE SAMPL	£ <i>U</i>	192
MATRIX	501	<u></u>	DATE RECEIV	VED7/9	192
SAMPLE No	69132		JOB No	C007	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	7/9/92	OL	7/10/92	<u>MO</u>	2369
VUATIS			7/14/92		2124
BN+15	7/15/92	<u>SS</u>	7/16/92	JP	1850
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	Soraz		DATE SAMPL	ED 7/7	92
CLIENT	5,7		DATE DECEM	VED_ 7/9/	92
			DATE RECEIV	C 0 D 7	
SAMPLE No	69133		JOB No	0007	
Analytic <u>Parameter</u>	Extraction Date/Time	Extractor's Initials	Analysis Date/Time		QA Batch No.
VOA T	(0-12)		7/14/92		2120
ABN	7-17-92	SS	711692		1850
PCB / Pest.	710-92	<u>rs</u>	7-28-92		1888
Antimony	7/16/92	<u>BT</u>	7/17/92 1253	- JM	1967
Beryllium					
<u>Cadmium</u>					
<u>Chromium</u>			_		
Copper	· 			-	
Nickel					
Silver			_		
Zinc		-		BT	
Mercury			7/10/92	$-\frac{1}{10}$	- +
Arsenic		•	_ 7/1/1/2 19		_ —
Lead			7/17/92 1	- 10	
<u>Selenium</u>		-	<u> </u>	/	
Thallium			7/4/2-16		<u> </u>
Cyanide	7/13/92	<u> </u>	7/27/9		1269
<u>Phenois</u>	7/13/92	<u>PP</u>	7/2/92	e RR	
					KH0V006089

CLIENT Sorge			DATE SAMPLED 7/7/92		
MATRIX	Soil		DATE RECEIV		92
SAMPLE No	69134		JOB No	C007	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	7/10/92	<u>OL</u>	7/14/92	MD	2370
					
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				<u> </u>	
					
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CLIENT_Sorge			DATE SAMPLED 7/1/92			
MATRIX	501		DATE RECEIVED 7/9/92			
SAMPLE No	69135		JOB No	C007		
Analytic Parameter	Extraction Date/Time	Extractor's Initials		Analyst's Initials	QA Batch No.	
PHC	7/10/92	OL	7/13/92	<u>~0</u>	2370	
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CLIENT Sorge			DATE SAMPLED 7/7/92			
MATRIX	501		DATE RECEIVED 7/9/92			
SAMPLE No	69136		JOB No	C007		
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis <u>Date/Time</u>	Analyst's <u>Initials</u>	QA Batch No.	
PHC	7/10/92	<u> </u>	7/14/92	MO	2370	
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ENVIROTECH RESEARCH, INC. 777 NEW DURHAM ROAD, EDISON, NJ 08817

(908) 549-3900

Sorge DATE SAMPLED DATE RECEIVED SOL MATRIX_ c007 JOB No. SAMPLE No._ QA Analyst's Analysis Extractor's Extraction Analytic Batch No. Date/Time Initials Initials Date/Time_ Parameter

CLIENT	~		DATE SAMPLED 7/7/92			
MATRIX_SOI			DATE RECEIVED 7/9/92			
SAMPLE No	69138		JOB No	C007		
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis <u>Date/Time</u>	Analyst's Initials	QA Batch No.	
PHC	7/1/92	<u> </u>	7/14/92	<u>MO</u>	2370	
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	Socar		DATE SAMPLE	ED 6/3/	92	
CLIENT	Sorge		DATE RECEIV	ED7/9	6/3/92 7/9/92	
SAMPLE No	16125		JOB No	L007		
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.	
PHC	7/10/92	DL	7/14/92	<u> </u>	2370	
						
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CLIENT_Sorge			DATE SAMPLED 6/31/92 DATE RECEIVED 7/9/92		
MATRIX	Soil		DATE RECEIV	VED_7/9/	92
SAMPLE No	6914	0	JOB No	C007	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time		QA Batch No.
PHC	7/10/92	0	7/14/92	<u>~~0</u>	2370
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CLIENT	Sorge		DATE SAMPL	ED6/3	6/31/92	
MATRIX			DATE RECEIV	ED7/9	192	
SAMPLE No	1041	/	JOB No	C007		
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.	
PHC	7/10/92	<u>OL</u>	7/14/92	<u> 140</u>	2370	
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ENVIROTECH RESEARCH, INC. 777 NEW DURHAM ROAD, EDISON, NJ 08817 (201) 549-3900

	Sorge		DATE SAMPLE	7/2/	92
CLIENT	1		DATE RECEIVE	7/9/9	12
MATRIX	Soil	<u> </u>	,	C007	
SAMPLE No	69147	<u></u>	JOB NO		
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Date/Time _	Analyst's Initials	QA Batch No
VOA +	10-25		7/14/92	CC	2124
ABN	7-17-92	55		40	1850
PCB / Pest.	7-10-92	<u> K-S</u>	7-18-84 7/11/92 1301	RRM	1888
Antimony	7/16/92	BT.	7/17/92 1301		-,,,,,
Beryllium					
<u>Cadmium</u>					
Chromium			_ —		
Copper					
Nickel					
Silver					
Zinc			2/16/92	BT	
Mercury			मायिक रिशे		-
Arsenic			richterio	TM	
Lead		_	2/17/92 130		- +
<u>Selenium</u>		_	7/74/92 0201	· 	- +-
<u>Thallium</u>	$\underline{\hspace{1cm}}$		<u> 7/24/921230</u>		
Cyanide	2/13/42	<u>aa</u>	7/27/91	_ 6 &	1209
Phenois	7/13/52	- RL		<u>lk</u>	1194
			<i>'</i>		

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ENVIROTECH RESEARCH, INC. 777 NEW DURHAM ROAD, EDISON, NJ 08817 (201) 549-3900

CLIENT	Sorge		DATE SAMPL	ED 7/2/	192 192
MATRIX	69143		JOB No	C007	
Analytic	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
Parameter + VOA	Date/IIme_	14111414	7/14/92	· cc_	2124
VOA	7-1392	SS	7/22/42	20_	1850
ABN		ES	7-28-92	RAM	1888
PCB / Pest.	7-10-42	BT	7/17/92 1309		1967
Antimony	7/16/92	<u> </u>	<u> </u>		
Beryllium					-
<u>Cadmium</u>				. —	
Chromium					
Copper	·		_		_
Nickel					
Silver					
Zinc				<u> </u>	
Mercury			2/16/92	BT	_
Arsenic			7/27/92/5	25 4B	
Lead				309 JM	_
			7/21/20	. 1/2	
Selenium			7/24/2/2	l ,	
Thallium_	-1. /	_ _ \	7/27/12	90	1209
Cyanide	1/13/42	- <u>,,,,,</u>	1 1.		1194
<u>Phenois</u>	7/72/92	- RR		<u>le</u>	
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CLIENT	Sorge		DATE SAMPLED 7/8/92			
MATRIX	501		DATE RECEIVED 7/9/92			
SAMPLE No	69144		JOB No	C007		
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time		QA Batch No.	
PHC	7/1d92	<u> </u>	7/14/92	140	2370	
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CLIENT_Sorge			DATE SAMPLED 7/8/92		
	501		DATE RECEIVED 7/9/92		
SAMPLE No	69145			C007	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	7/10/92	<u>OL</u>	7/14/92	<u>MD</u>	2370
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CLIENT Sorge			DATE RECEIVED 7/9/92		
MATRIX	Soil		DATE RECEIV		192
SAMPLE No	69146		JOB No	C007	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No. 2370
PHC	7/10/92	0	7/14/92	<u>MD</u>	<u> </u>
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CLIENT Sorge			DATE SAMPLED 7/8/92 DATE RECEIVED 7/9/92			
MATRIX SAMPLE No	69147		JOB No			
Analytic Parameter PHC	Extraction Date/Time 7/10/92	Extractor's Initials OL	Analysis Date/Time 7/14/92	Analyst's Initials MD	QA Batch No. 2370	

CLIENT_Sorge MATRIX_Soil			DATE SAMPLED 7/8/92 DATE RECEIVED 7/9/92		
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Date/Time	Analyst's Initials	QA Batch No.
PHC	7/10/92	DL.	7/14/92	MO	2370
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CLIENT	Sorge		DATE SAMPL	ED7/6	192
	Soil		DATE RECEIV	- 10	192
MATRIX	69149		JOB No		
SAMPLE No	6 11 1	=			0.4
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	7/10/92	DL	7/14/92	MO	2370
VONTIS			7/17/92	cc	2124
BN+15	7/15/92	55			1850
	7/17/92	BJR	7/22/92	40	1848
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CLIENT Sorge			DATE SAMPLED 7/492		
MATRIX			DATE RECEIV	ED_ 7/9/	92
SAMPLE No	69150		JOB No	C007	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's <u>Initials</u>	QA Batch No.
PHC	7/10/92	1L	7/14/92	MO	2370
VSAFIS			7117/92	cc	2124
BNHS	7/15/92	<u> 55</u>	7/17/92		_1850
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CLIENT Sorge MATRIX Soil			DATE SAMPLED 7/8/92 DATE RECEIVED 7/9/92		
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	7/10/92	DL	7/14/92	<u> 40</u>	2370
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CLIENT Sorge			DATE SAMPLED 7/8/92		
	Soil			VED	192
SAMPLE No	69152		JOB No	C007	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	7/10/92	PL	7/14/92	MD	2370
•					
				_	

777 New Durham Road Edison, New Jersey 08817 Tel: (908) 549-3900 Fax: (908) 549-3679

CHECKED IN 8/13/92

DATA ENTERED

August 13, 1992

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876

Attention: Mr. Chris Finley

Re: Job No. C022 - Hovnanian

Dear Mr. Finley:

Enclosed are the results you requested for the following samples taken 7/9/92 & 7/10/92:

·*		
Lab No.	Client ID	Analysis Requested
69339	B406-1	PHC
69340	B406-2	PHC
69341	B406-3	PHC
69342	B406-4	PHC
69343	B406-5	PHC
69344	B406-6	PP Metals & PHC
69345	B406-7	PHC
69346	B406-8	PHC
69347	B406-9	PP Metals & PHC
69348	B408-16	PHC
69349	B408-17	PHC
69350	B408-18	PHC
69351	B407-9	PHC
69352	B408-19	VOA +15, BN +15 & PHC
69353	B409 −€	VOA +15 & PHC
69354	B408-20	PHC
69355	B408-21	PHC
69356	B408-22	PHC
69357	B408-23	PHC
69358	B408-24	PHC
69359	408-PS	PP +40
69360	B409-1	PHC

Lab No.	Client ID	Analysis Requested
69361	B409-2	PHC
69362	B409-3	PHC
69363	B409-4	PHC
69364	B409-5	PHC
69365	B409-6	PHC

Please call me at 549-3900 if you have any questions.

Very truly yours,

Michael J. Urban Laboratory Manager

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GC/EC - Raw Data	7
Chain of Custody/Lab Chronicles	8

Analytical Methodology Summary

Volatile Organics:

Water samples are analyzed for volatile organics by purge and trap GC/MS as specified in EPA Method 624. Solid samples are analyzed for priority pollutant volatile organics as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8240. Water samples are analyzed for benzene, toluene, ethylbenzene and xylenes (BTEX) by GC-PID as specified in EPA Methods 503.1 and 602. Solid samples are analyzed for BTEX as specified in EPA Method 8020.

Acid and Base/Neutral Extractable Organics:

Water samples are analyzed for acid and/or base/neutral extractable organics by GC/MS in accordance with EPA Method 625. Solids are analyzed for acid and/or base/neutral extractable priority pollutants as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8270.

GC/MS Nontarget Compound Analysis:

Analysis for nontarget compounds is conducted, upon request, in conjunction with GC/MS analyses by EPA Methods 624, 625, 8240 and 8270. Nontarget compound analysis is conducted using a forward library search of the EPA/NIH/NBS mass spectral library of compounds at the greatest apparent concentration (10% or greater of the nearest internal standard) in each organic fraction (15 for volatiles, 15 for base/neutrals and 10 for acid extractables).

Organochlorine Pesticides and PCBs:

Water samples are analyzed for organochlorine pesticides and PCBs by dual column gas chromatography with electron capture detectors as specified in EPA Method 608. Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8080.

Total Petroleum Hydrocarbons:

Water samples are analyzed for petroleum hydrocarbons by I.R. using EPA Method 418.1. Solid samples are prepared for analysis by soxhlet extraction consistent with the March 1990 N.J. DEP "Remedial Investigation Guide" Apendix A, page 52, and analyzed by U.S. EPA Method 418.1.

Metals Analysis:

Metals analyses are performed by any of four techniques specified by a Method Code provided on each data report page, as follows:

- P Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP)
- A Flame Atomic Absorption
- F Furnace Atomic Absorption
- CV Manual Cold Vapor (Mercury)

Water samples are digested and analyzed using EPA methods provided in "Methods for Chemical Analysis of Water and Wastewater" (EPA 600/4-79-020). Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition); samples are digested according to Method 3050 "Acid Digestion of Soil, Sediments and Sludges."

Specific method references for ICP analyses are water Method 200.7 and solid Method 6010. Mercury analyses are conducted by the manual cold vapor technique specified by water Method 245.1 and solid Method 7471. Other specific Atomic Absorption method references are as follows:

		Water	Test Method	Solid	Test Method
71		Flame	Furnace	Flame	<u>Furnace</u>
Element		202.1	202.2	7020	
Aluminum			204.2	7040	7041
Antimony		204.1		7040	7060
Arsenic			206.2	7080	
Barium		208.1			7091
Beryllium		210.1	210.2	7090	
Cadmium		213.1	213.2	7130	7131
Calcium		215.1		7140	
Chromium,	Total	218.1	218.2	7190	7191
Chromium,		218.4	218.5	7197	7195
Cobalt	` - /	219.1	219.2	7200	7201
Copper		220.1	220.2	7210	
Iron		236.1	236.2	7380	
Lead		239.1	239.2	7420	7421
		242.1		7450	
Magnesium				7460	
Manganese		243.1		7520	
Nickel		249.1			
Potassium		258.1		7610	7740
Selenium			270.2		
Silver		272.1	272.2	7760	
Sodium		273.1		7770	
Tin		283.1		7870	
Thallium		279.1		7840	7841
Vanadium		286.1		7910	7911
		289.1			
Zinc		203.1	203.2	,,,,,	

Cyanide:

Water samples are analyzed for cyanide using EPA Method 335.2. Cyanide is determined in solid samples as specified in the EPA Contract Laboratory Program IFB dated July 1988, revised February 1989.

Phenols:

Water samples are analyzed for total phenols using EPA Method 420.1. Total phenols are determined in solid samples by preparing the sample as outlined in the EPA, Contract Laboratory Program IFB for cyanide, followed by a phenols determination using EPA Method 420.1.

Cleanup of Semivolatile Extracts:

Upon request Method 3611 Alumina Column Cleanup and/or Mehtod 3650 Acid-Base Partition Cleanup are performed to improve detection limits by the removal of saturated hydrocarbon interferences.

Hazardous Waste Characteristics:

Samples for hazardous waste characteristics are analyzed as specified in the U.S. EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition). Specific method references are as follows:

Ignitability - Method 1020

Corrosivity - Water pH Method 9040 Soil pH Method 9045

Reactivity - Chapter 7, Section 7.3.3 and 7.3.4 respectively for hydrogen cyanide and hydrogen sulfide release.

Toxicity - TCLP Method 1311

Miscellaneous Parameters:

Additional analyses performed on both aqueous and solid samples are in accordance with methods published in the following references:

- Test Methods for Evaluating Solid Wastes, SW-846 3rd Edition, November 1986.
- Standard Methods for the Examination of Water and Wastewater, 17th Edition.
- Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, 1979.

DATA REPORTING QUALIFIERS

- ND The compound was not detected at the indicated concentration.
 - J Mass spectral data indicates the presence of a compound that meets the identification criteria. The result is less than the specified detection limit but greater than zero. The concentration given is an approximate value.
 - B The analyte was found in the laboratory blank as well as the sample. This indicates possible laboratory contamination of the environmental sample.

Report Date: 8/13/92 Job No.: C022 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 2371

PETROLEUM HYDROCARBONS

Envirotech Sample #	<u>Client ID</u>	Pet <u>% Solid</u>	roleum Hydrocarbons mg/kg (Dry Wt.)
69339	B406-1	92.1	ND
69340	B406-2	85.2	210
69341	B406-3	89.1	25
69342	B406-4	88.5	ND
69343	B406-5	89.5	ND
69344	B406-6	88.3	54
69345	B406-7	87.8	ND
69346	B406-8	91.5	ND
69347	B406-9	90.7	ND
69348	B408-16	86.0	60
69349	B408-17	86.3	30
69350	B408-18	86.0	ИД
69351	B407-9	90.4	ND
69352	B408-19	83.8	1690
69353	B409-58	76.0	37
69354	B408-20	87.2	ND
69355	B408-21	85.7	ND
69356	B408-22	84.2	26
69357	B408-23	83.7	ND

Detection Limit for Petroleum Hydrocarbons is 25 mg/kg.

Report Date: 8/13/92
Job No.: C022 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 2372

PETROLEUM HYDROCARBONS

Envirotech Sample #	Client ID		roleum Hydrocarbons mg/kg (Dry Wt.)
69358	B408-24	85.2	- ND
69359	408-P5	88.6	ND
69360	B409-1	84.6	ND
69361	B409-2	87.8	. ND
69362	B409-3	86.8	ND
69363	B409-4	85.9	ND
69364	B409-5	82.6	ND
69365	B409-6	85.7	ND

Detection Limit for Petroleum Hydrocarbons is 25 mg/kg.

Nickel

Silver

Zinc

Selenium

Thallium

Report Date: 8/13/92 Job No.: C022 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1967

4.0

0.5

1.0

0.5

2.0

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METALS

Lab No. 69344

25

ND

ND

134

0.78

Client ID: B406-6 Detection Limit 88.3% Solid Method Code Units: mq/kq Units: mq/kq (Dry Weight) Parameter P 6.0 ND Antimony F 0.5 2.4 Arsenic P 0.5 ND Beryllium P 0.5 ND Cadmium P 1.0 26.7 Chromium P 2.5 58.3 Copper P 5.0 209 Lead CV 0.1 1.40 Mercury

Method Code: P-ICP, A-Flame AA, F-Furnace AA, CV-Manual Cold Vapor.

P

F

P

F

P

Thallium

Zinc

Report Date: 8/13/92 Job No.: C022 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1967

2.0

METALS

ND

32.4

Lab No. 69347 Client ID: B406-9 Detection Limit 90.7% Solid Method Code Units: mg/kg Units: mg/kg (Dry Weight) Parameter P 6.0 ND Antimony F 0.5 ND Arsenic P 0.5 ND Beryllium P 0.5 ND Cadmium P 1.0 13.4 Chromium P 2.5 22 Copper P 5.0 ND Lead CV 0.1 ND Mercury P 4.0 14 Nickel F 0.5 ND Selenium P 1.0 ND Silver F 0.5

Method Code: P-ICP, A-Flame AA, F-Furnace AA, CV-Manual Cold Vapor.

P

Report Date: 8/13/92
Job No.: C022 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 2132A

VOLATILE ORGANICS

Lab No. 69352 Client ID: B408-19

·	83.8% Solid	Detection Limit
<u>Parameter</u> <u>U</u>	nits: ug/kg (Dry Weight)	
Paragona.	ND	5.0
Benzene Bromodichloromethane	ND	5.0
	ND	5.0
Bromoform Bromomethane	ND	10
	ND	5.0
Carbon tetrachloride	ND	5.0
Chlorobenzene	ND	` 10
Chloroethane		10
2-Chloroethylvinyl eth	ND	5.0
Chloroform	ND	10
Chloromethane	ND	5.0
Dibromochloromethane	ND	5.0
1,1-Dichloroethane	ND	5.0
1,2-Dichloroethane	ND	5.0
1,1-Dichloroethene		5.0
trans-1,2-Dichloroethe	ND	5.0
1,2-Dichloropropane		5.0
cis-1,3-Dichloropropen		5.0
trans-1,3-Dichloroprop	ND	5.0
Ethyl benzene	5.8B	5.0
Methylene chloride		5.0
1,1,2,2-Tetrachloroeth	ND ND	5.0
Tetrachloroethene	ND	5.0
Toluene	36B	5.0
1,1,1-Trichloroethane	иD	5.0
1,1,2-Trichloroethane	ИD	5.0
Trichloroethene		5.0
Trichlorofluoromethane	ND ND	10
Vinyl chloride	ND ND	5.0
Xylenes (Total)	ND	5.

TENTATIVELY IDENTIFIED COMPOUNDS

Client	Sample Identification: 408-10	
	No.: 69352 Job No.: CU22	
	n when the Market DDM	(DDR)

	COMPOUND NAME	Retention Time	Estimated Conc.
1		24.42	19
2	Ω (a.1.1a.6)	28.36 29.95	20
3	C10 H20 "	29.915	10
	unknown	31.28	16
5	<u>'l</u>	1 35.01	17
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25		KHr)V006121 —

Report Date: 8/13/92
Job No.: C022 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1850

BASE/NEUTRAL EXTRACTABLES

Lab No. 69352 Client ID: B408-19 83.8% Solid Detection Limit

· ·		83.8%	Solid		Detection Li	mlt
Parameter	Units:			Weight)	Units: ug/	<u>kq</u>
1,3-Dichlorobenzene		1	ND		8300	
1,4-Dichlorobenzene			ND		8300	
Hexachloroethane		j	ND		8300	
Bis(2-chloroethyl) ether			ND		8300	
1,2-Dichlorobenzene			ND		8300	
Bis(2-chloroisopropyl) et	her		ND		. 8300	
N-Nitrosodi-n-propylamine	1101		ND		8300	
			ND		8300	
Nitrobenzene			ND		8300	
Hexachlorobutadiene			ND		8300	
1,2,4-Trichlorobenzene			ND		8300	
Isophorone			100J		8300	
Naphthalene	no		ND		8300	
Bis(2-chloroethoxy) metha	1116		ND		8300	
Hexachlorocyclopentadiene	•		ND		8300	
2-Chloronaphthalene			ND		8300	
Acenaphthylene			600J		8300	
Acenaphthene			ND		8300	
Dimethyl phthalate			ND		8300	
2,6-Dinitrotoluene			300J		8300	
Fluorene		1	ND		8300	
4-Chlorophenyl phenyl eth	ier		ND		8300	
2,4-Dinitrotoluene			-		8300	
Diethylphthalate			ND		8300	
N-Nitrosodiphenylamine			ND		8300	
Hexachlorobenzene			ИD		9300	

Report Date: 8/13/92 Job No.: C022 - Hovnanian N.J. Certified Lab No. 12543

QA Batch 1850

BASE/NEUTRAL EXTRACTABLES (con't)

Lab No. 69352 Client ID: B408-19 Detection Limit 83.8% Solid Units: ug/kg (Dry Weight) Units: ug/kg Parameter 8300 ND 4-Bromophenyl phenyl ether 8300 15000 Phenanthrene 8300 2200J Anthracene 8300 ND Dibutyl phthalate 8300 17000 Fluoranthene 8300 14000 Pyrene 17000 ND Benzidine 8300 ND Butyl benzyl phthalate 8300 ND Bis(2-ethylhexyl) phthalate 8300 7600**J** Chrysene 8300 5800J Benzo(a) anthracene 17000 ND 3,3'-Dichlorobenzidine 8300 ND Di-n-octyl phthalate 8300 4800J Benzo(b) fluoranthene 8300 4700J Benzo(k) fluoranthene 8300 1400J Benzo(a)pyrene 8300 1900J Indeno(1,2,3-c,d)pyrene 8300 510J Dibenzo(a,h)anthracene 8300 1700J Benzo(ghi)perylene 8300 ND N-Nitrosodimethylamine

TENTATIVELY IDENTIFIED COMPOUNDS

	Sample Identification: T408-19
Client	No.: 69352 Job No.: 69352 Fraction: 6022 Fraction: 6022
Sample	No.: 69552 Job No.: CC 22
	Concentration Units: PPM PPB

COMPOUND NAME	Time	Estimated Conc.
	17776	14000
unknown	27.70	1 (1000
CZOHIZ PAH		1-4000
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KH0V006124

Report Date: 8/13/92
Job No.: C022 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 2132A

VOLATILE ORGANICS

	Lab No. 69353 🚶	•
	Client ID: B409-5	
	76.0% Solid	Detection Limit
<u>Parameter</u> <u>U</u>	Jnits: ug/kg (Dry Weight)	<u>Units: ug/kg</u>
Benzene	ND	5.0
Bromodichloromethane	ND	5.0
Bromoform	ND	5.0
Bromomethane	ND	10
Carbon tetrachloride	ND	5.0
Chlorobenzene	ND	5.0
Chloroethane	ND	10
2-Chloroethylvinyl eth	ner ND	10
Chloroform	ND	5.0
Chloromethane	ND	10
Dibromochloromethane	ND	5.0
1,1-Dichloroethane	ND	5.0
1,2-Dichloroethane	ND	5.0
1,1-Dichloroethene	ND	5.0
trans-1,2-Dichloroethe		5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloroprope	ne ND	5.0
trans-1,3-Dichloropro	pene ND	5.0
Ethyl benzene	ND	5.0
Methylene chloride	ND .	5.0
1,1,2,2-Tetrachloroet	hane ND	5.0
Tetrachloroethene	ND	5.0
Toluene	ND	5.0
1,1,1-Trichloroethane	2.7JB	5.0
1,1,2-Trichloroethane	ND	5.0
Trichloroethene	ND	5.0
Trichlorofluoromethan		5.0
Vinyl chloride	ND	10
Xylenes (Total)	ND	5.0
•		

TENTATIVELY IDENTIFIED COMPOUNDS

	ent Sample Identification: 409-5		
Sam	ple No.: 69353 Job No.: <u>Co22</u> Fra	ction:V	<u>oc</u>
	Concentration Units: PPM PPB		
	COMPOUND NAME	Retention Time	Estimated Conc.
1	NO VOLATILE ORGANICS COMPOUNDS FOUND	.	
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TENTATIVELY IDENTIFIED COMPOUNDS

Client Sample Identification: 408-P5		
Sample No.: 69359 Job No.: C022 Fra	ction:V	OC
Concentration Units: PPM PPB		
COMPOUND NAME	Retention Time	Estimated Conc.
1. NO VOLATILE ORGANICS COMPOUNDS FOUND CC	.	l
2	-	
4		
5	_	
7		
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11		
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14	_	
16	_	
17		
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22	_	
23	_	 /UN\/N06497
25	_	KH0V006127

Report Date: 8/13/92 Job No.: C022 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1850

ACID EXTRACTABLES

Parameter Units: ug/kg (Dry Weight	Units: ug/kg
2-Chlorophenol ND 2-Nitrophenol ND Phenol ND 2,4-Dimethylphenol ND 2,4-Dichlorophenol ND 2,4,6-Trichlorophenol ND 4-Chloro-3-methylphenol ND 2,4-Dinitrophenol ND 2,4-Dinitrophenol ND 2-Methyl-4,6-dinitrophenol ND Pentachlorophenol ND A-Nitrophenol ND	330 330 330 330 330 330 1700 1700

Report Date: 8/13/92
Job No.: C022 - Hovnanian
N.J. Certified Lab No. 12543
OA Batch 1850

BASE/NEUTRAL EXTRACTABLES

Lab No. 69359 Client ID: 408-PS Detection Limit 88.6% Solid Units: ug/kg Units: ug/kg (Dry Weight) Parameter 330 ND 1,3-Dichlorobenzene 330 ND 1,4-Dichlorobenzene 330 ND Hexachloroethane 330 ND Bis(2-chloroethyl) ether 330 ND 1,2-Dichlorobenzene 330 ND Bis(2-chloroisopropyl) ether 330 ND N-Nitrosodi-n-propylamine 330 ND Nitrobenzene 330 ND Hexachlorobutadiene 330 ND 1,2,4-Trichlorobenzene 330 ND Isophorone 330 27J Naphthalene 330 ND Bis(2-chloroethoxy) methane 330 ND Hexachlorocyclopentadiene 330 ND 2-Chloronaphthalene 330 60J Acenaphthylene 330 31J Acenaphthene 330 ND Dimethyl phthalate 330 ND 2,6-Dinitrotoluene 330 38J Fluorene 330 ND 4-Chlorophenyl phenyl ether 330 ND 2,4-Dinitrotoluene 330 ND Diethylphthalate 330 ND N-Nitrosodiphenylamine 330 ND Hexachlorobenzene

Report Date: 8/13/92
Job No.: C022 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1850

BASE/NEUTRAL EXTRACTABLES (con't)

	Lab No. 69359	
	Client ID: 408-PS	
	88.6% Solid	Detection Limit
Parameter	Units: ug/kg (Dry Weight)	<u>Units: ug/kq</u>
		220
4-Bromophenyl phenyl ether	ND	330
Phenanthrene	720	330
Anthracene	140Ј	330
Dibutyl phthalate	97J <i>→</i>	330
Fluoranthene	1400	330
Pyrene	1800	330
Benzidine	ND	670
Butyl benzyl phthalate	ND	330
Bis(2-ethylhexyl) phthalat		330
Chrysene	1000	330
Benzo(a) anthracene	830	330
3,3'-Dichlorobenzidine	ND	670
	ND	330
Di-n-octyl phthalate	930	330
Benzo(b) fluoranthene	760	330
Benzo(k) fluoranthene	850	330
Benzo(a) pyrene	780	330
Indeno(1,2,3-c,d)pyrene		330
Dibenzo(a,h)anthracene	240J	330
Benzo(ghi)perylene	710	
N-Nitrosodimethylamine	ND	330

TENTATIVELY IDENTIFIED COMPOUNDS

Client	Sample Identifica	tion: 408-PS	
Sample	No.: 69359	Job No.: COZZ	Fraction: BNA

Concentration Units:

M (PP

	COMPOUND NAME	Retention Time	Estimated Conc.
======			:=========
_	Cistible still coentras PAH	127.91	220
1	9,10-ANTHRACENEDIME	28.57	220
2	DIMETHYL PHENIANTHILENE ISOMER	29.39	150
3	BENZOLD MEHTHOLZ Z-B FURAN	30.87	300
4 ·	DENIZO DINAPENTIDIZZA RATIONALIA	1 31.57	640
	CIFILL PAH	32.15	1 410
6	CIHHIOCLY	1 33,02	055
	WHOM	33.18	410
8	BENZOLEJNAPATAD[2,1-0]THICPHENE	37.49	300
9	DENTINE JURISH PAH'S	1 33.61	300
	C'HIDICIAHIS COELVING PAH'	133.82	220
	C17H12D	35,55	300
12	CAHILL PAH	136.22	640
	unknown ALKANE	1 37.72	1 530
14	Czotla PAH	1 38,05	11,000
15	Unknown ALKANE	1 38.19	1 980
16	CzoHiz PAH	1 39.02	1 410
	whom	1 35.38	1 340
	h Arma -	1 40.13	830
	WKnown ALKANE	1 41.41	530
20	(uknon)		1 340
	Czz Hiz PAH	1 41.70	1 640
-	MKNOW	1 4395	- (
23	1:	46.59	1-340
24	<u> </u>	!	_\
25		KHC)V006131

Report Date: 8/13/92
Job No.: C022 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1888

ORGANOCHLORINE PESTICIDES and PCBs

<u>Parameter</u>	Lab No. 69159 Client ID: 4.3-PS 88.6% Solid Units: ug/kg (Dry Weight)	Detection Limit <u>Units: ug/kg</u>
Aldrin	ND	16
	ND	16
alpha-BHC beta-BHC	ND	16
delta-BHC	ND	16
gamma-BHC (Lindane)	ND	16
Chlordane	ND	160
4,4'-DDD	ND	32
4,4'-DDE	41	32
4,4'-DDT	420	32
Dieldrin	ND	32
Endosulfan I	ND	16
Endosulfan II	ND	32
Endosulfan sulfate	ND	32
Endosullan Sallass Endrin	ND	32
Endrin aldehyde	ND	32
Heptachlor	ND	16
Heptachlor epoxide	ND	16
	ND	320
Toxaphene PCB-1016	ND	160
PCB-1016 PCB-1221	ND	160
PCB-1221 PCB-1232	ND	160
PCB-1232	ND	160
PCB-1242 PCB-1248	ND	160
PCB-1254	ND	160
PCB-1260	ND	160

Report Date: 8/13/92 Job No.: C022 - Hovnanian N.J. Certified Lab No. 12543

METALS and GENERAL CHEMISTRY

Lab No. 69359

ND		Client ID: 408-PS		
Antimony ND 6.0 P Arsenic 5.48 0.5 F Beryllium ND 0.5 P Cadmium ND 0.5 P Chromium 20.9 1.0 P Copper 33.7 2.5 P Lead 1200 5.0 P Mercury 1.39 0.1 CV Nickel 19 4.0 P Selenium ND 0.5 F Silver ND 1.0 P Thallium ND 5.0 F Zinc 451 2.0 P				
Arsenic 5.48 0.5 F Beryllium ND 0.5 P Cadmium ND 0.5 P Chromium 20.9 1.0 P Copper 33.7 2.5 P Lead 1200 5.0 P Mercury 1.39 0.1 CV Nickel 19 4.0 P Selenium ND 0.5 F Silver ND 1.0 P Thallium ND 5.0 F Zinc 451 2.0 P	<u>Parameter</u>	Units: mg/kg (Dry Weight)	<u>Units: mg/kg</u>	Method Code
Arsenic 5.48 0.5 F Beryllium ND 0.5 P Cadmium ND 0.5 P Chromium 20.9 1.0 P Copper 33.7 2.5 P Lead 1200 5.0 P Mercury 1.39 0.1 CV Nickel 19 4.0 P Selenium ND 0.5 F Silver ND 1.0 P Thallium ND 5.0 F Zinc 451 2.0 P		, ND	6.0	Þ
Beryllium ND 0.5 P Cadmium ND 0.5 P Chromium 20.9 1.0 P Copper 33.7 2.5 P Lead 1200 5.0 P Mercury 1.39 0.1 CV Nickel 19 4.0 P Selenium ND 0.5 F Silver ND 1.0 P Thallium ND 5.0 F Zinc 451 2.0 P				
Cadmium ND 0.5 P Chromium 20.9 1.0 P Copper 33.7 2.5 P Lead 1200 5.0 P Mercury 1.39 0.1 CV Nickel 19 4.0 P Selenium ND 0.5 F Silver ND 1.0 P Thallium ND 5.0 F Zinc 451 2.0 P				
Cadmium ND 0.5 P Chromium 20.9 1.0 P Copper 33.7 2.5 P Lead 1200 5.0 P Mercury 1.39 0.1 CV Nickel 19 4.0 P Selenium ND 0.5 F Silver ND 1.0 P Thallium ND 5.0 F Zinc 451 2.0 P	Beryllium	ND		P
Chromium 20.9 1.0 P Copper 33.7 2.5 P Lead 1200 5.0 P Mercury 1.39 0.1 CV Nickel 19 4.0 P Selenium ND 0.5 F Silver ND 1.0 P Thallium ND 5.0 F Zinc 451 2.0 P		ND	0.5	P
Copper 33.7 2.5 P Lead 1200 5.0 P Mercury 1.39 0.1 CV Nickel 19 4.0 P Selenium ND 0.5 F Silver ND 1.0 P Thallium ND 5.0 F Zinc 451 2.0 P		20.9	1.0	P
Lead 1200 5.0 P Mercury 1.39 0.1 CV Nickel 19 4.0 P Selenium ND 0.5 F Silver ND 1.0 P Thallium ND 5.0 F Zinc 451 2.0 P			2.5	P
Mercury 1.39 0.1 CV Nickel 19 4.0 P Selenium ND 0.5 F Silver ND 1.0 P Thallium ND 5.0 F Zinc 451 2.0 P				P
Nickel 19 4.0 P Selenium ND 0.5 F Silver ND 1.0 P Thallium ND 5.0 F Zinc 451 2.0 P				CV
NICKET				
Silver	-			
Thallium ND 5.0 F Zinc 451 2.0 P	Selenium			
Thallium ND 5.0 P Zinc 451 2.0 P	Silver	ND		
Zinc 451 2.0 P Cyanide ND 1.0		. ND	5.0	
Cyanide ND 1.0		451	2.0	P
Cyaniue	22			
Cyaniue				
Cyaniue	•			
	Cvanide	ND	1.0	1
Phenols ND 5.0	Phenols	ND .	5.0	

Method Code: P-ICP, A-Flame AA, F-Furnace AA, CV-Manual Cold Vapor.

	ENVIROT		
CHAIN-OF-CUSTODY RECORD	TMS 606 1538	ENVIROTECH JOB NO.	PROJECT NAME
NAME OF CHENT LIPPORT AND BULLINGS	ADDRESS (V)	CITY STALY STATE ZIP	ATTENTION 218 - DOS 6 PHONE

INC.
ENVIROTECH RESEARCH, I 777 NEW DURHAM ROAD EDISON, N.J. 08617

(808) 848-3800

1 26/6/2	TIME	SMPLD. BY	MATRIX	PRES.	NO. OF CONT.	SAMPLE LOCATION/DESCRIPTION	ANALYSIS REQUESTED	MUMBER
	113	MA	7105		7	8406-1: text boung	PHC	6935
	141	+	-		_	8.61-0.01 , 2-9048	PHC	0,269
	60 5	+				8406-3: 6.0-6.5	ンドム	143 11
`\ -	250	+				8406-4: 10.5-11.0	PHC	19342
	400	+				8406-5: 9.0-9.5	PHC	67363
V006	9141	+				8406-6 1 4.0.25	PUC/PPM	81344
	1441	+			-		PHC	14659
-	005	-			 -	8406-8: 10.0-10.5	つずる	74869
2/10/6	2141	>	 >		>	8406-9: 10.5-11.0	pag/ shd	64341
- 1								

SPECIAL INSTRUCTIONS: ELECA : F PH L > 500 ppm, please ran 8N+

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7	many war.	609/	2/-2	A BELLMOINGHED BY:	DATE/TIME	4. RECEIVED BY:	
<u>.</u>	2. RELINGUISHED DY:	DATE/TIME	2. RECEIVED BY:		í		
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11880 C.V. STATE FOR REPORT AND BILLINGS 18.0066 JM SORGE Spmerville NAME OF CLIENT ATTENTION ADDRESS

CHAIN-OF-CUSTODY RECORD

K. HOVNANIAN - NEIDAK JMS COC ENVIROTECH JOB NO. _ PROJECT NAME

ENVIROTECH RESEARCH, INC. 777 NEW DURHAM ROAD EDISON, N.J. 06617

(908) 548-3990

			,						ENVINOTECH
DATE	TIME	SMPLD.	MATRIX	PRES.	NO. OF CONT.	SAMPLE LOCATION/DESCRIPTION	ANALYSIS REQUESTED	TED	BAMPLE NUMBER
SMPLD		, t	Soil		-	French 408-16; 4ft.	PHC	•	69348
716/192 11:50	02:11		3			T 1, 132-17, 4ft.			64659
	11:25		+			Treated 450			0)251
→	13:45			•	,	Trench 408-18; 4gt.	•		1/19
710147					^	Trench 407-9, 5ft.	PHC		14321
11011		+	-		, ,	Trans 408-19, 5ft.	SAC, VO.		25:69
		1	+		80	Touch 409-8. 3 St.	CHI, VO		6953
•		-				Walter Co.			
<u>_</u>			,						
KH		<u> </u> .							
1 0V0		.		1					
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1 35									
			CONTAINERS:	MINIMERS	8				
				ECRA	HO J.	HC > 500 rom , please tun	un BN+.		
SPECIA	L INSTRU	SPECIAL INSTRUCTIONS:		 	+				
T. METINGH	Sksmon	24	DATE	DATE! TIME/	1. NECEIVED	ä	DATE/TIME	3. RECEIVED BY:	DY:
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DATE/TIME

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2. RECEIVED BY:

DATE/TIME

2. NELINGUISHED BY:

IFON REPONT AND BILLING! In Sorre Inc. Jemeruille CITY NAME OF CLIENT ATTENTION ADDRESS

CHAIN-OF-CUSTODY RECORD

JMS COC 1878

ENVIROTECH JOB NO. CO'27

ENVIROTECH RESEARCH, INC. 777 NEW DURHAM ROAD EDISON, N.J. 06817

(1001) 548-3800

ENVINOTECH K. Mountain PHONE

2 3	DATE SMPLD.	TIME SMPLD.	SMPLD.	MATRIX	PAES.	NO. OF CONT.	SAMPLE LOCATION/DESCRIPTION	ANALYSIS REQUESTED	SAMPLE
•	41	771	K V	2016	1	7	8408-20: 10.5-11.0	PHC	69354
•		1310					8408-21 1		65755
		1323					4 : 22-8048		(83 Sb
		338					n : £2-80h8		14357
		F441				>	B 408-24: "	>	65358
	>	1.53	>	>		B	# 404 - Ps	c++dd	65354
KHO/									
/0061									
36									
			TOTAL 9	TOTAL NO. OF CONTAINERS:	NTAINERS:	NS: 8	or non alease run BN+		
23	ECIAL	. INSTRU	CTIONS:	SPECIAL INSTRUCTIONS:					

4. RECEIVED BY:

DATE/TIME

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3. RECEIVED BY:

DATE/TIME

3. RELINGUISHED BY:

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1. RECEIVED BY:

2. RECEIVED BY:

DATE/TIME

2. MELINGUISHED BY:

PROJECT NAME 1FOR REPORT AND BILLINGS N.7. mi. STATE Fink Jomery Te 2MS pre NAME OF CLIENT ATTENTION ADDRESS. 15

PHONE

CHAIN-OF-CUSTODY RECORD

87.1 C.,;

JMS COC 1578

220) K. Hornaman ENVIROTECH JOB NO. ___

ENVIROTECH RESEARCH, INC. 777 NEW DURHAM ROAD EDISON, N.J. 06617

(908) 848-3900

ENVIROTECH SAMPLE SAMPLE		PHC 69360	67361	29867	64363	61364	♦ 693 65	FPUC >500 per plane	I say BN+			•
	SAMPLE LOCATION/DESCHIPTION	8409-1: 10.5-11.0	8409-T	E-boha	h-bon&	5 - boys	9-6048					
30 00		Ţ					>					او
	PRES.	1										TOTAL NO. OF CONTAINERS:
	MATRIX	2014					\rightarrow		-			NO. OF CO
	SMFLD.	AH					-					TOTAL
	TIME SMPLD.			500	\$201	501	6211					
	DATE SMPLD.	26/01/2					→		KI	1000	6137	

SPECIAL INSTRUCTIONS: R'C & A

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door the	1605	20-01		DATEITIME	A RECEIVED BY:
2. MELINOWSHED BY:	DATE/TIME	2. RECEIVED BY:	4. RELINGUISHED BY:		
	/ !		٠		

•	Dorge Soil		DATE SAMPLE	L <i>D</i>	0/92
MATRIX SAMPLE No		<u> </u>	JOB No. C	022_	
Analytic	Extraction	Extractor's	Analysis	Analyst's Initials	QA Batch No.
Parameter PHC	Date/Time 7/13/92	Initials DL	Date/Time 7/15/92	MD	237/
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·					KHOV006138

CLIENT	Sorge Soil		DATE SAMPL DATE RECEIV JOB No	VED 7/10	192
SAMPLE No. Analytic Parameter	69340 Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	7/13/92	0_	7/15/92	MO	2371
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CLIENT	Sorge		DATE SAMPL	ED 7/69	192
MATRIX	Soil		DATE RECEIV	(ED 	
SAMPLE No	69341	- 	JOB NoC	022	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC_	7/13/92	DL	7/15/92	<u> </u>	237/
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CLIENT	Jorge		DATE SAMPL	ED_7/09	192
MATRIY	Soil		DATE RECEIV	VED	3192
MAIRIA	69342		JOB No. C	022_	
Analytic	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
Parameter Oll C	7/13/92	0 L	7/15/92	140	237/
PHC_	///3/92	<u> </u>			
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CLIENT	Sorge	·	DATE SAMPL	ED 7/39	
	501		DATE RECEIV	VED_7/10	0/92
MATRIX	69343		JOB No. C	022	·
SAMPLE No	61242				
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC _	7/13/92	DL	7/15/92	<u> </u>	237/_
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MATRIX	_		DATE RECE	VED	0/92
	69344	4	JOB No	_	
Analytic Parameter	Extraction	Extractor's Initials	Analysis Date/Time		QA Batch No.
Antimony	7/16/92	BT	7/17/92 131	7	1967
<u>Beryllium</u>					
<u>Cadmium</u>					
<u>Chromium</u>					_
Copper		-			
<u>Nickel</u>					
Silver		<u> </u>			
Zinc					
<u>Lead</u>				<u> </u>	-
Arsenic			712492-18	1	
Selenium			7/74/2010	,	
<u>Thallium</u>			7/21/2-1306		
Mercury			7/16/92	BT	<u> </u>
PHC	7/13/92	0L	7/15/92	<u>MD</u>	237/
					
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CLIENT	Sorge		DATE SAMPLI	T/09/	
MATRIX	50iT	<u> </u>	DATE RECEIV	ED_7/10/	92
SAMPLE No	69345		JOB No. CO	022_	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	7/13/92	02	7/15/92	<u>MD</u>	_237/_
					
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CLIENT	Dorge		DATE SAMPL	ED 7/09	192
MATRIX	Dorge Soil		DATE RECEIV	VED	0/92
SAMPLE No	69346		JOB NoC	022	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	7/13/92	<u>OL</u>	7/15/92	<u> </u>	_2371_
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	Sorge		DATE SAMPLE	•	176
MATRIX	Soil		DATE RECEIV		3/92
SAMPLE No.	69347		JOB No.	.022_	
Analytic <u>Parameter</u>	Extraction Date/Time	Extractor's Initials		Analyst's Initials	QA Batch No.
Antimony	2/10/92	BT	7/17/92 1326	om	1967
<u>Beryllium</u>					
Cadmium					
<u>Chromium</u>	,				-
Copper		-	_		
<u>Nickel</u>					
Silver					-
Zinc					
Lead				110	
Arsenic	-	-	7/24/22203 2/24/22256 7/24/221219	45	
<u>Selenium</u>	-		7/23/92025		
<u>Thallium</u>			7/21/2-1719.		
Mercury	<u> </u>		7/11/92	BT	
PHC	7/13/92	0	7/15/92	MO	237/
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CLIENT	Dorge		DATE SAMPL	ED 7/09	192
MATRIX	50iT		DATE RECEIV	/ED_7/10	192
SAMPLE No	69348		JOB No. C	022_	• • •
Analytic Parameter	Extraction Date/Time	Extractor's	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	7/13/92	DL	7/15/92	MD	2371
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7/09/92 Socae DATE SAMPLED_ CLIENT_ 7/10 DATE RECEIVED__ Soi MATRIX. C022 JOB No. SAMPLE No._ QA Analyst's Analysis Extractor's Extraction Analytic Batch No. Date/Time Initials Initials Date/Time Parameter 237/

CLIENT	Dorge		DATE SAMPL	ED 7/9	
MATRIX	<u>5017</u>		DATE RECEIV	VED_ 7/10	1172
SAMPLE No	69350		JOB No. C	022_	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	7/13/92	DL	7/15/92	MD	237/
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	Dorge		DATE SAMPLE	<i>U</i>	92
MATRIX	Soil		DATE RECEIV	ED	
SAMPLE No	69351		JOB No. CC)	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Date/Time_	Analyst's Initials	QA Batch No.
PHC_	7/13/92	<u> </u>	7/15/92	MO	237/
					
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	20.00	•	DATE SAMPL	ED 7/10	192
CLIENT	Dorge		DATE RECEIV	7/10	192
MATRIX	Soil		DATE RECEIV	027	
SAMPLE No	69352		JOB No		
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's <u>Initials</u>	QA Batch No.
PHC_	7/13/92	DL	7/15/92	MO	237/
VOA			7/23/92		2132
Bn+15	7-1792	22	7/25/92	<u>JP</u>	820
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CLIENT Sorge MATRIX Soil SAMPLE No. 69353			DATE SAMPLED 7/10/92 DATE RECEIVED 7/10/92 JOB No. CO22			
Analytic Parameter PHC VoA	Extraction Date/Time 7/13/92	Extractor's Initials DL	Analysis Date/Time 7/15/92 9/24/92	Analyst's Initials	QA Batch No. 237/ 2/32	
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CLIENT	Dorge		DATE SAMPL	ED_7/	92
	50:7		DATE RECEIV	ED 7/10	192_
SAMPLE No	4 00 - 11		JOB No. C	022	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	7/13/92	- 01_	7/15/92	MD	_237/
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CLIENT_Sorge			DATE SAMPLED 7/10/92			
MATRIX	50:7		DATE RECEIV	ED 7/10	192_	
SAMPLE No	69355		JOB No. C	022		
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.	
PHC_	7/13/92	DL	7/15/92	MO	237/	
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CLIENT	orge Soil	·	DATE SAMPLI	ED 7/10	192
MATRIX	50i7		DATE RECEIV	ED	192
SAMPLE No.	69356		JOB No. C	022_	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	7/14/92	DL	7/15/92	M	_237/_
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CLIENT Socie			DATE SAMPLED 7/10/92		
			DATE RECEIVED 7/10/92		
SAMPLE No	69357	·	JOB No. C	024	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's <u>Initials</u>	QA Batch No.
PHC_	7/14/92	07	7/15/92	<u>MO</u>	237/_
					
					
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CLIENT	Dorge		DATE SAMPLI	ED_7/10	192
MATRIX	50iT		DATE RECEIV	ED7/10	0192
MIA 1	69358		JOB No. C	022	
SAMPLE No	61320				-
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Date/Time_		QA Batch No.
PHC_	7/14/92	OL	7/15/92	<u> </u>	2372
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CLIENT	Sorge		DATE SAMPL	ED 7/10	192
MATRIX	Soil		DATE RECEI	VED_ 7/10	192
SAMPLE No	(0350		JOB No		
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
<u>VOA</u>	(ETB)		7/24/92		2/32
ABN	7-17-92	22	7/24/42		1850
PCB / Pest.	7-13-92	<u>GR</u>	7-14-92	RRM	1888
Antimony	7/16/92	BT	2/17/92 135	0 <u> </u>	1967
Beryllium					
Cadmium			_		
<u>Chromium</u>			_	_	
Copper			_		
<u>Nickel</u>					
Silver				_	
Zinc		-			
Mercury			7/16/92		
Arsenic		_	_ 7/X/4 8	55 UB	
Lead			2/0/92 13		_ —
Selenium			7/24/2403	' / '	
<u>Thallium</u>		<u> </u>	7/24/92		<u> </u>
Cyanide	7/20/92	RR	7/20/42	RR	1209
<u>Phenols</u>	7/22/92	el	7/2/93	2 RR	<u> </u>
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CLIENT MATRIX SAMPLE No	orge 50:1		DATE SAMPLED 7/10/92 DATE RECEIVED 7/10/92 JOB No. CO22			
Analytic Parameter PHC	Extraction Date/Time 7/14/92	Extractor's Initials OL	Analysis Date/Time 7/15/92	Analyst's Initials MD	QA Batch No. 2372	

CLIENT Social			DATE SAMPLED 7/10/92 DATE RECEIVED 7/10/92		
			JOB No. CO22		
SAMPLE No	69361	·	JOB No	JZ L	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC:	7/14/92	<u> </u>	7/15/92	_MD_	1372
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CLIENT_Sorge			DATE SAMPLED 7/10/92			
MATRIX Soil			DATE RECEIVED 7/10/92			
SAMPLE No. 69367			JOB No. CO22_			
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.	
PHC_	7/14/92	<u> </u>	7/15/92	<u> </u>	2372	
						
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CLIENT Socge			DATE SAMPLED 7/10/92		
۲۰ ح			DATE RECEIVED 7/10/92		
			JOB No. C	022	
SAMPLE No	69363		JOB No		
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	7/14/92	<u>OL</u>	7/15/92	MD	2372
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CLIENT Soil			DATE SAMPLED 7/10/92			
Soil Soil			DATE RECEIVED 7/10/92 JOB No. CO22			
SAMPLE No. 69364						
SAMPLE No	61509				QA	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Date/Time	Analyst's Initials	Batch No.	
PHC	7/14/92	0L	7/15/92	MD	2372	
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CLIENT SOIDE			DATE SAMPLED 7/10/92 DATE RECEIVED 7/10/92		
			DATE RECEIVED		
SAMPLE No	69365		JOB No	COZL	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	7/14/92	04	7/15/92	MO	2372
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APPENDIX C

STANDARD SAMPLING PROCEDURES

TRAILER-MOUNTED AUGER SAMPLING PROCEDURES

Soil borings were made using a trailer-mounted, solid stem auger rig. Soil samples were collected by standard hand auger techniques in the following manner.

Equipment:

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- o Trailer mounted solid stem auger rig;
- o Two, 8-inch length, stainless steel hand trowels;
- o Disposable fiber brush;
- o Distilled water (2 gallons);
- o Distilled water/alconox mixture (2 gallons);
- o Acetone (1 gallon);
- o Two, plastic spray applicators;
- o Wide mouth, amber glass jars and septum vials with teflon-lined screw caps;
 - o Sample cooler/ice packs;
 - o Bentonite pellets.

- 1) A trailer-mounted solid stem auger rig will be used to advance the boring to a point above the desired sampling depth;
- The soil materials encountered during the boring will be logged by the geologist as they are brought to the surface;
- The auger will be placed in the hole and advanced to the desired sample depth and removed. Upon removal, the auger will be scrubbed clean using an alconox and distilled water mixture. After scrubbing, the auger will be rinsed with the alconox/water mixture and then rinsed again with distilled water. The auger will be rinsed with acetone to remove any residual materials, then air dried, then given a final rinse with distilled water.
- 4) A clean auger (the second) will be used to collect the soil from the sample zone. The auger will be advanced one foot and brought to the surface.

- 5) The soil will be removed from the auger. Only the interior portion (3 to 4 inches) of the soil will be collected for later analysis. The top and the bottom of the sample will be discarded. A portion of the sample will be set aside for field analysis.
- The soil sample for laboratory analyses will be placed in a wide-mouth amber jar or septum vials with a teflon-lined screw cap. A sample label will be prepared showing the sample number, depth of collection, date, and analysis to be conducted. A Chain-Of-Custody control form will also be prepared.
- 7) The soil sample bottles will be placed in a storage cooler at 4°C (wet ice) for transfer to the J M Sorge, Inc. offices in Somerville, New Jersey. (The samples will be refrigerated until transfer to the laboratory for analysis).
- 8) The auger used to collect the sample for laboratory analysis will be decontaminated using the procedure detailed in Item 3 above.
- 9) At the completion of the boring, the bore hole will be backfilled with bentonite.

TRUCK MOUNTED AUGER SAMPLING PROCEDURES

Soil borings were advanced using a bruck mounted, solid stem auger rig. Soil samples were collected by standard hand auger techniques in the following manner:

Equipment:

- o Truck mounted sold stem auger rig;
- o Two, 8-inch length, stainless steel hand trowels;
- o Disposable fiber brush;
- o Distilled water (2 gallons);
- o Distilled water/alconox mixture (2 gallons);
- o Acetone (1 gallon);
- o Two (2) plastic spray applicators;
 - o Wide-mouth, amber glass jars and septum vials with teflon-lined screw caps;
 - o Sample cooler/ice packs;
 - o Bentonite pellets.

- A truck-mounted, solid stem auger rig was used to advance the boring to a point above the desired sampling depth;
- The soil materials encountered during the boring were logged by the geologist as they were brought to the surface;
- The auger was placed in the hole and advanced to the desired sample depth and removed. Upon removal, the auger was scrubbed clean using an alconox and distilled water mixture. After scrubbing, the auger was rinsed with the alconox/water mixture and then rinsed again with distilled water. The auger was rinsed with acetone to remove any residual materials then air dried, and given a final rinse with distilled water.

- 4) A clean auger (the second) was used to collect the soil from the sample zone. The auger was advanced one foot and brought to the surface.
- 5) The soil was removed from the auger. Only the interior portion (3 to 4 inches) of the soil was collected for later analysis. The top and bottom of the sample was discarded. A portion of the sample was set aside for field analysis.
- The soil sample for laboratory analyses was placed in a wide-mouth amber jar or septum vials with a teflonlined screw cap. Λ sample label was prepared showing the sample number, depth of collection, date, and analysis conducted. Λ Chain-of-Custody control form was also prepared.
- 7) The soil sample bottles were placed in a storage cooler at 4°C (wet ice) for transfer to the J M Sorge, Inc. offices in Somerville, NJ. (The samples were refrigerated until transfer to the laboratory for analysis).
- 8) The auger used to collect the sample for laboratory analysis was decontaminated using the procedure detailed in Item 3 above.
- 9) At the completion of the boring, the bore hole was backfilled with bentonite.

HAND AUGER BORING AND SAMPLE COLLECTION

Soil borings were made and samples collected from the all hand auger bore holes in the following manner:

Equipment:

- Two, 4-inch O.D. stainless steel hand augers (AMS manufacture);
- o Two, 8-inch length, stainless steel hand trowels;
- o Disposable fiber brush;
- o Distilled water (2 gallons);
- o Distilled water/alconox mixture (2 gallons);
- o Acetone (1 gallon);
- o Two, plastic spray applicators;
- o Wide mouth, amber glass jars and septum vials with teflon-lined screw caps;
- o Sample cooler/ice packs;
- o Bentonite pellets.

- The surface area was cleared of debris by hand and a shallow hole dug (about 6 inches deep) with a hand trowel;
- The auger was placed in the hole and advanced to the desired sample depth and removed. Upon removal, the auger was scrubbed clean using an alconox and distilled water mixture. After scrubbing, the auger was rinsed with the alconox/water mixture and then rinsed again with distilled water. The auger was rinsed with acetone to remove any residual materials, air dried, then given a final rinse with distilled water.
- 3). The soil materials encountered during the boring were logged by the geologist as they were brought to the surface;
- 4) A clean auger (the second) was used to collect the soil from the sample zone. The auger was advanced one foot and brought to the surface.

- The soil was removed from the auger. Only the interior portion (3 to 4 inches) of the soil was collected for later analysis. The top and the bottom of the sample was discarded. A portion of the sample was set aside for field analysis.
- The soil sample for laboratory analyses was placed in a wide-mouth amber jar or septum vials with a teflon-lined screw cap. A sample label was prepared showing the sample number, depth of collection, date, an analysis was conducted. A Chain-Of-Custody control form was prepared.
- 7) The soil sample bottles were placed in a storage cooler at 4°C (wet ice) for transfer to the J M Sorge, Inc. offices in Somerville, New Jersey. (The samples were refrigerated until transfer to the laboratory for analysis).
- 8) The auger used to collect the sample for laboratory analysis was decontaminated using the procedure detailed in Item 2 above.
- At the completion of the boring, the bore hole was backfilled with bentonite.

WASTE CLASSIFICATION SOIL SAMPLING PROCEDURES

The following information details the Waste Classification Soil Sample Collection Procedures. These procedures represent methods utilized to ensure the validity of soil samples collected at the site.

The composite soil samples will be collected in the following manner:

Equipment:

- o Two, 4-inch O.D., stainless steel hand auger;
- o Two, stainless steel hand trowels;
- o 5-quart stainless steel mixing bowl;
- o Disposable fiber brush;
- o Distilled water (2 gallons);
- o Distilled water/alconox mixture (1 gallon);
- o Acetone (1 gallon);
- o Plastic spray bottle applicators;
- o Wide-mouth, amber glass jars with teflon-lined screw caps;
- o Sample cooler/ice packs

- 1) One (1) composite soil sample will be collected each 100 cubic yards of excavation spoils. Each composite sample will be made up of four (4) individual soil samples. The soil samples will be collected from different boring depths to attain the most accurate representation of the waste spoils.
- The auger will be advanced to the desired sampling depths, and the auger controls will be placed into a stainless steel mixing bowl. Following the collection of four (4) soil samples, the contents within the bowl will be thoroughly emptied on a bench-kote paper and divided into quarters. Only one quarter will be placed into a sampling jar.

- Jupon completion of the sampling for that particular drum, the auger will be scrubbed clean, using alconox and distilled water mixture. After scrubbing, the auger will be rinsed with a alconox/distilled water mixture and then rinsed again with distilled water. The auger will be rinsed with acetone to remove any residual materials, allowed to air dry, then given a final rinse of distilled water. The hand trowel and mixing bowl will also be decontaminated following the same procedures between sample collection.
- The soil sample for laboratory analyses will be placed into a wide-mouth amber jar with a teflon-lined screw cap. A sample label will be prepared showing the sample number, date, and analysis to be conducted. A Chain-of-Custody Control form will also be prepared.
- The soil sample bottles will be placed into a storage cooler at 4°C (ice packs) for transport to the J M Sorge, Inc. offices located in Somerville, NJ. The samples will be refrigerated until transferred to the laboratory for analysis.

SURFACE SAMPLE COLLECTION PROCEDURE

Soil samples were collected from all sample locations in the following manner:

Equipment:

- Two, 8-inch length stainless steel hand trowels;
- o Disposable fiber brush;
- o Distilled water (2 gallons);
- o Distilled water/alconox mixture (2 gallons);
- o Acetone (1 gallon);
- o Two, plastic spray applicators;
- o Wide mouth, amber glass jars and septum vials with teflon lined screw caps;
- o Sample cooler/ice packs;

- The surface area was cleared of debris by hand and a shallow hole dug with a hand trowel;
- The hand trowel was placed in the hole and advanced to the desired sample depth and removed. Upon removal, the trowel was scrubbed clean using an alconox and distilled water mixture. After scrubbing, the trowel was rinsed with the alconox/water mixture and then rinsed again with distilled water. The trowel was rinsed with acetone to remove any residual materials, air dried, then given a final rinse with distilled water:
- The soil materials encountered during the sampling were logged by the geologist.

- The soil samples for laboratory analyses were placed in a wide-mouth amber jar or a septum vial with a teflon lined screw cap. A sample label was prepared showing the sample number, depth of collection, date, and analysis to be conducted. A Chain-of-Custody control form was prepared.
- 5) The soil sample bottles were placed in a storage cooler at 4°C (wet ice) for transfer to the J M Sorge, Inc. offices in Somerville, New Jersey. (The samples were refrigerated until transfer to the laboratory for analysis).

Analytical Methodology Summary

Volatile Organics:

Water samples are analyzed for volatile organics by purge and trap GC/MS as specified in U.S. EPA Method 624. Solid samples are analyzed for priority pollutant volatile organics as specified in the U.S. EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8240.

Acid and Base/Neutral Extractable Organics:

Water samples are analyzed for acid and/or base/neutral extractable organics by GC/MS in accordance with U.S. EPA Method 625. Solids are analyzed for acid and/or base/neutral extractable priority pollutants as specified in the U.S. EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8270.

GC/MS Nontarget Compound Analysis:

Analysis for nontarget compounds is conducted, upon request, in conjunction with GC/MS analyses by U.S. EPA Methods 624, 625, 8240 and 8270. Nontarget compound analysis is conducted using a forward library search of the EPA/NIH/NBS mass spectral library of compounds at the greatest apparent concentration (10% or greater of the nearest internal standard) in each organic fraction (15 for volatiles, 15 for base/neutrals and 10 for acid extractables).

Organochlorine Pesticides and PCBs:

Water samples are analyzed for organochlorine pesticides and PCBs by dual column gas chromatography with electron capture detectors as specified in U.S. EPA Method 608. Solid samples are analyzed as specified in the U.S. EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8080.

Petroleum Hydrocarbons:

Water samples are analyzed for total petroleum hydrocarbons by I.R. using U.S. EPA Method 418.1. Solid samples are prepared for analysis by soxhlet extraction consistent with SW-846 Method 3540, as modified by the Draft "N.J. DEP ECRA Sampling Plan Guide", Attachment 2 page 9, and analyzed by U.S. EPA Method 418.1.

Metals Analysis:

Metals analyses are performed by any of four techniques specified by a Method Code provided on each data report page, as follows:

- P Inductively Coupled Plasma Emission Spectroscopy (ICP)
- A Flame Atomic Absorption
- F Furnace Atomic Absorption
- CV Manual Cold Vapor (Mercury)

Water analyses are performed using EPA methods provided in "Methods for Chemical Analysis of Water and Wastewater" (EPA 600/4-79-020). Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition).

Specific method references for ICP analyses are water Method 200.7 and solid Method 6010. Mercury analyses are conducted by the manual cold vapor technique specified by water Method 245.1 and solid Method 7471. Other specific Atomic Absorption method references are as follows:

Element		Water <u>Flame</u>	Test Method Furnace	Solid <u>Flame</u>	Test Method Furnace
Aluminum		202.1	202.2	7020	
Antimony		204.1	204.2	7040	7041
Arsenic			206.2		7060
Barium		208.1		7080	7000
Beryllium		210.1	210.2	7090	7091
Cadmium		213.1	213.2	7130	7131
Calcium		215.1		7140	, 131
Chromium,	Total	218.1	218.2	7190	7191
Chromium,		218.4	218.5	7197	7195
Cobalt	. ,	219.1	219.2	7200	7201
Copper		220.1	220.2	7210	7201
Iron		236.1	236.2		
Lead		239.1	239.2	7420	7421
Magnesium		242.1		7450	7421
Manganese		243.1	243.2	7460	
Nickel		249.1	249.2	7520	
Potassium		258.1		7610	
Selenium			270.2	7010	
Silver		272.1	270.2	77.00	7740
Sodium		273.1	212.2	7760	
Thallium		279.1	270 2	7770	
Vanadium			279.2	7840	7841
Zinc		286.1	286.2	7910	7911
41110		289.1	289.2	7950	

Cyanide:

Water samples are analyzed for cyanide using U.S. EPA Method 335.2. Cyanide is determined in solid samples as specified in the U.S. EPA Contract Laboratory Program IFB dated July 1988, revised February 1989.

Phenols:

Water samples are analyzed for total phenols using U.S. EPA Method 420.1. Total phenols are determined in solid samples by preparing the sample as outlined in the U.S. EPA, Contract Laboratory Program IFB for cyanide, followed by a phenols determination using EPA Method 420.1.

Hazardous Waste Characteristics:

Samples for hazardous waste characteristics are analyzed as specified in the U.S. EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition). Specific method references are as follows:

Ignitability - Method 1020

Corrosivity - Water pH Method 9040 Soil pH Method 9045

Reactivity - Chapter 7, Section 7.3.3 and 7.3.4 respectively for hydrogen cyanide and hydrogen sulfide release.

EP Toxicity - Method 1310

Miscellaneous Parameters:

Additional analyses performed on both aqueous and solid samples are in accordance with methods published in the following references:

- Test Methods for Evaluating Solid Wastes, SW-846 3rd Edition, November 1986.
- Standard Methods for the Examination of Water and Wastewater, 16th Edition.
- Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, 1979.